

OECD TRILOG Plenary Symposium

Public Policy Issues in Global Freight Logistics



 **Conference
Proceedings**

**Washington, DC
December 17-18, 1998**

OECD

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**U.S. Department of Transportation
Federal Highway Administration**

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**H Auditorium of the World Bank
Washington, D.C. 20433**

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Call to Order

MODERATOR SCHACKNIES: Good morning ladies and gentlemen. Welcome to the fifth OECD plenary symposium on public policy issues in global freight logistics. I am honored and pleased by the large turnout on such a short notice.

My name is Bert Schacknies. I am the Senior Policy Advisor at the FHWA Office of International Programs, and I would also like to express my appreciation for your participation at this event on behalf of King Gee, the director of our office, who will be joining us later.

I am the U.S. coordinator of the North American task force of the OECD's Trilateral Logistics Project, Trilog Project, as well as the FHWA representative at the newly established OECD's Advisory on Intermodal Freight Policy.

The purposes of the Trilog Project will be explained over the course of the two-day symposium, but basically it is aimed at clarifying the public policy issues in global freight logistics and strengthening the public-private partnership in resolving freight-related problems throughout the world.

The symposium themes and scope of panel sessions respond to the terms of reference developed two years ago at the first plenary seminar in Mexico City and evolved further in conferences in Toronto, Tokyo, and Brussels.

Consistent with past practices, we have also prepared a handbook with background material and biographical statements of presenters. Please review these bios as you listen to the speakers.

We have limited the speakers to a maximum of 15 minutes and hope that there will be some time at the end of the panel sessions for a few Q&As. If there is not enough time, we welcome participants to share their comments in writing for inclusion in the final report.

Finally I wish to thank our team of organizers at FHWA, Jim Hansen, Jay Spaid, Sherif Gamal, Paula Ferguson, and others; our contract support staff from KPMG/LBI, Jennifer Clinger and Stephanie Mattes; from the IBRD, Marc Juhel and colleagues; from Mexico's SCT, Jose San Martin Romero; and from Transport Canada, Helena Borges. I trust that you will have a successful symposium.

I will now call on our host, John Flora, Transport Sector Manager at the World Bank, to offer the first of the official welcoming remarks.

Opening Addresses

WORLD BANK HOST MR. FLORA: This is a very timely event that's going on right now. Talk about logistics. Some people refer to it as supply chain management. It involves a lot of different components. For many of us, it's the transporter. It's the shipper. But it's also the facilitator. It's very much the rules and the regulations, the legalities, these types of things. All of you know this. But what is important about this simple statement is the relative roles that everybody will play. Eight years ago, the bank was told to stay out of it. This is something the private sector would do.

The World Bank, as many of you know, is constrained by its charter to lend only to the public sector through national governments. We can lend to the private sector if a national government underwrites it. We have a private sector arm, the IFC. But the bank can only lend to governments. Consequently, we were told to stay out of logistics.

Well, government has a major role to play in this supply chain management. The private sector can't work effectively if facilitation procedures are not there, if Customs procedures are not straight, if the rules and regulations — if there is no legal recourse, all the different things that all of you know about.

Bringing together or identifying the appropriate role for the public and private sector is very, very important. It's very important to the bank. And that's one of the reasons I think this whole series of workshops is very important.

Another reason that this workshop is particularly important for the bank right now is it's another step in the cooperative arrangements that we have developed now with U.S. DOT.

I think for too many years the bank was an island. We didn't need partners. Well, that's just not true. I think we found very much that we do.

Over the last year or so, we have been meeting with the Secretary, with the U.S. DOT, with FHWA, as well as a number of our other partners. But what this represents today is quite a new step in the partnership arrangements with the U.S. DOT, and we certainly welcome it.

I think that we can make arrangements with a number of private sector companies in the United States and other partners in the United States, which heretofore we haven't done.

I'm an American, came up in the American system with the state government, city government. For whatever reason, the bank has not done as much with the U.S. government as we have done with many others. So I really welcome this opportunity.

I won't spend too much time because I want to get into it. I think the type of deliberations we'll have over the next several days, particularly the practical demonstrations, what the shippers are saying, what the facilitators are saying, what public officials who are having to live with the consequences of this are saying, will very much set the stage for the final action plan in the year 2000.

I want to welcome everyone here on behalf of the bank. If there's anything we can do to help facilitate the proceedings... I think Bert, Marc Juhel, others here have done an outstanding job in putting this together. I really want to express the bank's appreciation for the opportunity to be a part of this.

We had hoped the bank president could be here. And, unfortunately, you're getting a very, very poor substitute. But he is on his way someplace else right now. But he wanted me to express how he feels about this. It's extremely important.

Trade, facilitation of trade, free markets, government's role, the private sector role is something the bank is very much involved in now. We welcome everyone here and wish you all a successful and excellent conference. Thank you very much.

FEDERAL HIGHWAY ADMINISTRATOR MR. WYKLE: Good morning. I'm Ken Wykle, the Administrator of the Federal Highway Administration of the U.S. Department of Transportation.

I'd like to, first of all, thank John and thank the World Bank for hosting this plenary session of the OECD Trilateral Logistics Project.

I also want to welcome our international partners to this event, Mr. Thomas Andersson and Anthony Ockwell from OECD, Dr. Wim Blonk of the European Commission, Professor Nemoto and his colleagues from the Japanese Ministries of Transport and Construction, Mrs. Kristine Burr from Transport Canada, and Mr. Oscar de Buen and Jose San Martin Romero of the Mexican Secretariat of Communications and Transportation, as well as the speakers, moderators, and participants who accepted our invitation to discuss the critical public policy issues that influence global logistics and affect the growth of global trade and economic development.

Our purpose is to discuss and define and clarify the role of government as it works together with the private sector to overcome the transport-related constraints to global trade. We recognize the necessity of identifying and resolving these issues in a multilateral context, instead of through unilateral actions.

The Federal Highway Administration has actively supported the OECD Trilog Project by participating in defining the original terms of reference, contributing to earlier sessions in Mexico City, Tokyo, Toronto, and Brussels, cosponsoring and organizing this fifth plenary symposium, and supporting other efforts by OECD and the participating organizations.

We are aware of the significance of this project and the support we can provide to global trade and economic development initiatives, especially next year's negotiations to be held under the auspices of the World Trade Organization.

We continue to support the implementation of the transport-related portions of the North American Free Trade Agreement, NAFTA. We also expect to help shape the transportation-related sections of the other three multilateral trade agreements: the Free Trade Agreement of the Americas, Asia-Pacific Economic Cooperation Forum, and the Transatlantic Economic Partnership.

We are active in various transport working groups helping to identify and remove intermodal transport-related barriers to trade. Our agency is now directly involved in freight-related activities.

The Intermodal Surface Transportation Efficiency Act of 1991 caused us to examine freight-related issues. For those of you not familiar with that term, that was a bill passed by Congress in 1991 that provided the resources, the funding mechanism, for us to improve our intermodal capabilities, primarily focusing on highways but certainly providing resources for other aspects of the intermodal system.

That was for six years. So this year, the Transportation Equity Act for the 21st Century institutionalized this process by requiring full consideration of freight concerns in the state and metropolitan transport development process.

So Congress reauthorized this bill for six more years. The President signed it on the 9th of June of this year, 1998. So we have a steady funding stream, if you will, for six more years to address transportation issues and, again, primarily on the highway side with this particular bill, although a considerable portion is transit also.

Three of the Federal Highway's and the Department of Transportation's strategic goals, mobility, safety, and national security, tie directly to freight. And our management process tracks our progress in addressing freight and trade issues.

As a result of the Federal Highway Administration's organizational restructuring efforts, the Federal Highway Administration will now have an entirely new division dealing exclusively with freight. This is really a first, the first time since the organization came into being in 1916, we have had an element devoted strictly to freight and the movement of freight.

Why this new emphasis on freight? Well, because 80 percent of all freight by dollar value that moves in the United States moves by truck. We need to emphasize the growing U.S. economic dependence on free trade with the rest of the world.

The export and import trades in goods and services and the growth of transnational corporations all have significant intermodal transport implications for stakeholders in U.S. domestic and international markets. The 1997 U.S. trade statistics can really only hint at the magnitude of the potential transport-related issues. We had exports of \$689 billion. We had imports of \$871 billion. Direct foreign investments by the United States overseas were \$860 billion. And foreign investments in the United States were \$682 billion. So you can see we are importing more than we are exporting, and we are investing more overseas than is being invested in the United States. All of that involves trade and the movement of freight and goods.

The globalization of our economies involves an increasing number of U.S.-owned and -affiliated corporations operating in the United States as well as internationally.

U.S. carriers are expected to provide seamless, just-in-time, door-to-door services across national borders and throughout the world. This requires the harmonization of all the transportation modes and the global supply chain.

We must understand the role of government in supporting private sector activity in the global marketplace and the need for a politically sensitive harmonization of legal, regulatory, and operational frameworks and the intermodal transport sector.

The government's efforts need to extend beyond facilitating trade and providing access to ports of entry. One goal of this plenary session is to begin a discussion of the public policy issues in intermodal freight logistics and what actions the government should take to facilitate and encourage improvements.

Legislation, international cooperation and agreements, international standards, technology deployments, and regulations are some of the tools available to government to help ensure access to markets to encourage mobility improvements and meet the needs of firms operating in the global market.

Our intent should be to help identify the scope and range of public policy issues that may be subjected to further review and evaluation to enhance global trade.

This session should also focus on those portions of the North American experience that may be relevant to the rest of the world and particularly to OECD member countries and their trading partners.

I hope we will also achieve a consensus on the issues to be placed on the OECD institutional reform agenda and that can be incorporated into World Bank's portfolio of intermodal transport sector projects.

I invite the U.S. private sector stakeholders to be actively involved in defining and developing action agendas to address the critical freight policy issues affecting international transportation trade.

In addition to this forum, there are also various U.S. government channels that may be used. These include the Federal Highway Administration's Office of Policy and our Office of International Programs, our newly established Freight Operations Division, the Department of

Transportation's Office of International Transport and Trade, and the Departments of State, Commerce, and the U.S. Trade Representative's Office.

To achieve success, governments and the private sector must work together to enhance the movement of freight through the global supply chain.

I would like to thank you in advance for your contributions and the contributions to the dialogue to truly make a difference in the global supporting infrastructure and the intermodal transportation system.

I trust that your time with us over the next two days will be rewarding and worthwhile to you. Enjoy the session. Thank you.

OECD REP. MR. ANDERSSON: Good morning. My name is Thomas Andersson, and I am a Deputy Director for Science Technology and Industry at the OECD, based in Paris.

Let me first express my appreciation for the U.S. initiative to organize this first meeting of the plenary task force of the Trilog Project that takes place in North America.

I'd also like to thank the World Bank for hosting the event and also for your participation. You will feature quite strongly on the agenda and we hope to add very much to the discussion. So we're very happy about that.

I'd also like to say that I am very pleased to have this opportunity to tell you a little bit about what the OECD is doing in the area of transport and logistics. We are not as active, in fact, in this field as the World Bank.

The transport industries have featured on the agenda of the OECD for about 30 years. But it is also true that it's only as of the beginning of this year that we have been able to form a division for transport issues in the OECD. So in a sense, we are a little bit at a watershed.

But let me tell you about the OECD in general because I think to most people the OECD is not that well known. It has been a meeting place for governments, a place where they could exchange views quietly about different problems that they are confronted with, identify solutions together with a secretariat of about 1,700 staff members. And today the organization has swelled to a group of the 29 most developed countries in North America, Europe, and the Asia-Pacific.

However, in recent years, I would say that the OECD has started to change its operations in certain ways. It has become more open. It has engaged itself in more dialogue with different stakeholders in society. It has become much more involved in horizontal challenges that count across traditional boundary lines between distance and spheres of responsibility.

Now, this very much reflects a change in the role of government in a more general sense. It has become much more clear than in the past that the government cannot really commit the private sector.

In many ways, it is the private sector that has assumed the driving seat in economic development. Still, the government continues to play a very important role. And to some extent, this is really occurring through its interaction with the private sector. But this interaction has become very complex and multifaceted.

In a fundamental sense, I would say that this development is driven by the intertwined processes of globalization and technological progress. And both of these are very much addressed in a number of the OECD activities. I won't go into these at this stage since there is limited time.

But let me say that the development in transport and logistics both contributes to and is fundamentally affected by globalization and technological progress.

Commercial integration involves continuous increases in the movement of goods, capital, and people. It imposes tremendously increased pressures on transport systems. For instance, in 1995, world trade grew by 8 percent in volume terms. That's four times the rate of world GDP.

Meanwhile, this development is accompanied by so-called external effects on the economy, safety, and the environment. These are not fully taken into account.

Congestion causes delays, increases costs for industry, and affects its competitiveness. Congestion costs alone have been estimated at about 2 percent of GDP in OECD countries. Furthermore, clearly the transport sector is an important contributor to emissions of greenhouse gases, in particular, CO₂. It is, in fact, the only sector where greenhouse gas emissions have increased, rather than decreased, in the past decades. But at the same time, there are enormous benefits.

It is not only that transport is increasing. It responds to new demands for greater reliability, speed, and flexibility. Electronic commerce and new operation and strategic approaches to logistics are, in fact, revolutionizing the whole consumer-driven process.

New technologies hold the key to increased efficiency as well as sustainability. And those who respond are said to be rewarded. The transport solutions for the future are inherently innovative and adaptive, environmentally friendly, efficient, and safe.

Now, reflecting the situation in member countries, I would say — and I'm coming back here to sort of the role of transport in the OECD — that in the past, the transport industries have really been quite scattered in the organization.

We had for a long time, as I mentioned before, the program or the research on road transport. And this has now become very much addressed to the intermodal linkages and has been put within the Division of Transport that started to work as of this year.

The Trilog Project, which we're here to discuss today, is one of the key components, not only in this program itself but also in the work, to really have this Transport Division work in a coordinated way on the transport issues in the economy as a whole.

In this way, the OECD is in a sense changing gears, but it is a challenge to demonstrate that the transport issues really in a concrete way can be addressed and can contribute to liberalization and the other changes that were mentioned from the report of the World Bank.

Now, let me point out that the Trilog Project is one of the cornerstones and that there were some other activities here that are closely related with this project. And I'd like you to be aware of them. I'll spend a few minutes on them.

First, the Advisory Group on Intermodal Freight Transport is on a number of initiatives that have taken place over the last years. In particular, I'd like to point out that in cooperation with the Mexican government, the OECD organized a major conference on this issue in Mexico City in '97.

On that occasion, there was broad agreement on the potential benefits for the more widespread and rational use of intermodal solutions. But it was equally clear that there is some way to go as regards organizational structures and mechanisms for decision-making that can promote intermodal solutions effectively.

The Intermodal Freight Transport Advisory Group will first address the institutional aspects, will compare and assess disruptions for governments to see how effectively they develop integrated transport policies. And I'm here very pleased to note that the United States, in fact, is taking the lead role in developing this project.

This will be followed by benchmarking to examine and compare the relative efficiency of the modal combinations and modal interfaces in different countries.

Now, second, we had the advice of a group on the implementation of intelligent transport systems. And this is set to adverse conditions in four major areas that strongly influence successful implementation of ITS. These are: interoperability, professional training, user behavior and acceptance, and, fourth, public-private partnership.

The extraordinary market potential for ITS products and services is already joining private companies into the development and sales of products worldwide. Many countries have tried to estimate the expected benefits. The OECD advisory group is examining these approaches.

One interesting example is that of the ITS Australia, which has estimated that ITS applications currently generate about one billion Australian dollars annually and that expansion in this country alone will produce an additional estimated 14 billion Australian dollars by the year 2012.

It is generally accepted, I would say, that the underlying technology for our tasks either already exists or is in the process of being developed. The significant barriers to full-scale implementation are clearly nontechnical.

The institutional, legal, economic, financial, and social impacts were unclear for the key decision-makers, government, and industry as well as, in particular perhaps, for the public at large. And there was just some confusion and some undue delays.

Last but not least — and, again, we had the Trilog Project — the background is, of course, that logistics costs account for a very big part of the total costs of the manufacturing industry in OECD countries, estimated at about 20 percent. And other calculations have found that a 1 percent reduction in logistics costs might have the same effect as a 10 percent increase in sales for private companies.

However, there are constraints to achieving international efficiencies. These emanate from the pursuit of national, broader than regional, or global interests.

Solutions may range from standardization of the infrastructure, compatibility of integrated information systems and hardware, to regulatory reform.

Truly efficient advanced global logistics systems need somehow to be treated primarily by regional and global economic interests, rather than national ones.

In a sense, Trilog aims to help identify some of these key regional and global interests that are currently hurt and to develop options for improvement while seeking to distinguish — and this I'd like to emphasize — between, on the one hand, what needs to be done within each region and what needs to be done in cooperation working across the regions.

So part of the job is to examine key characteristics and commonalities of logistics systems in selected industries, such as automobile, chemicals, consumer electronics, food, textiles, and also then to look at the barriers to integrating logistics operations across sectors through, for instance, third-party logistics.

Another aspect is that integrated global logistics require certain skills with implications for the development, training, and education of professionals and for employment.

Finally, data are essential for measuring the efficiencies of logistics systems. There are today a number of serious obstacles to the collection of comprehensive and accurate data.

Tracking of the freight for research purposes in the production process as well as in bringing goods to markets is almost impossible. This is an area where the Trilog Project might make a significant contribution.

Now, coming back to the organization of these projects, there are three regional task forces covering Asia-Pacific, Europe, and North America. Japan is chairing the Asia-Pacific task force. The European Commission's Directorate General Number VII is chairing the European task force, and the United States, the North American group.

The three task forces are coordinated through a plenary expert group of the program. The timetable is that the task force reports should be completed by November next year. A coordinated report is set to be available in May 2000.

Now to conclude. The Trilog Project really is a major challenge. In a way, it is too open-ended. It leaves a lot to variance, and the end results will much depend on the creativity and the

responsiveness of the regional participants and their willingness to view the region in the context of the global issues, the global transport system.

The project is not only interesting in its own right. Its open-ended mandate makes it potentially very strong in identifying key issues and forming a building block for other, more limited activities and thereby in the development toward more concrete and more comprehensive treatment of the horizontal transport issues in the OECD and also in the member countries.

This is what we hope to achieve together with you, and we hope that this meeting and the continued work in this project will further strengthen the international network that is required to put transport even further into the core of the international policy work that is aiming at more open and mutually beneficial exchange between all countries.

So thank you very much for organizing this event. I'm very much looking forward to the continued discussions.

REGIONAL TRILOG COORDINATOR FROM EUROPE DR. BLONK: Good morning, ladies and gentlemen. My name is Wim Blonk. I am the Director in DG VII Transport in the European Commission, responsible for general transport policy development and for the whole transport research portfolio.

It was with great pleasure that I accepted the invitation to participate in this symposium and to share with you the European Commission's views on logistics and supply chain management as well as to present to you the activities of the Trilog's European task force.

Since World War II, world economic output has risen by 4 percent per annum while the work rate has grown annually by 6 percent. These two figures clearly demonstrate the trends of globalization and of economic integration. The result of this is more and more competition that focuses on the highest quality for the best price at the lowest cost. To remain competitive, a company needs to cut drastically inefficiencies by optimizing process management. Not surprisingly, in the traditional industrialized countries, a clear shift is being implemented from resource industry to knowledge industry supported by process technologies and tools.

Logistics is the process management tool par excellence. Its growing importance is due to the fact that it provides an integrated framework for an entity sourcing, production, entity solution. The optimization of these functions determines the competitiveness of a company. In general, the main objective of logistics is to compress cycle time. The benefits are threefold: a release of working capital, shorter response time, and more overall flexibility.

Especially in the last decade, companies have come to realize that enhancing in-company flows was not sufficient any more and that you had to go a step further, to optimization of the entire supply chain from source to consumer. While logistics is a pure business function, supply chain management is not. It also has other stakeholders than only companies. To put it differently, logistics in our opinion determines the competitive position of a company while supply chain management affects the competitiveness of countries in regions. In fact, supply chain management is not only to compress cycle times but also to provide responsiveness, agility, leanness, and the learning capabilities of companies on the supply chain basis. In doing so, it looks at ways to substitute resources by information.

I think policy-makers have an obligation to take supply chain management seriously and to examine how we can support better the endeavors of the industry in this area. This I would say is the big picture, but there is more. Supply chain management also is important for different policy strengths.

Let me zoom in on transport, an area that concerns DG VII in Brussels more directly. Sustainable mobility — it was already mentioned before — is the main objective of the European Community's common transport policy, and it comprises two important components.

On the one hand, there is a supply of transport services that should be sustainable, meaning the transport market should be open and level, that competition should be fair, and that the external costs should be limited and internalized.

On the other hand, we should keep in mind that transport is a derived market and that the demand for freight services is driven by the logistics requirements of the industry. Therefore, policy-makers should not only address the supply side of transport but also the demand side of transport. Demand mobility management is, for example, important.

Transport policy-makers should examine a number of actions that could stimulate the creation of sustainable transport demand side. Thus, they need to look at how to better use the transport resources in supply chains. I would like to point out briefly that there's still a lot of scope

for optimization in the European Union's transport market. I'm convinced that this is also the case for the American continent as well as for the Asian-Pacific region.

Basically the problem is that shippers generally request dedicated transport resources, instead of a dedicated service. They consider using a dedicated carrier as a competitive advantage. But this also creates huge inefficiencies. The number of empty trucks in the European Union is estimated to be 40 percent of the total. And the loading factors could in many cases be considerably improved. There is, therefore, an urgent need to promote cooperative freight management throughout and between the supply chains. The European Commission has recognized the importance of supply chain management and is currently undertaking different initiatives that will provide data and information on European supply chains.

The outcome of this endeavor will enable us to determine more precisely the nature and the scope of the possible policy initiatives to facilitate supply chain management. I will briefly describe the three different ongoing projects. First of all, we are running a study on transport and logistics. The aim of that study is to identify the different logistics environments in Europe, and to examine each of these environments for European supply chain management to look at the maturity of logistics markets by measuring the importance of the so-called third-party logistics providers.

At present, results are already available on the existence of different logistical environments. Astonishingly we clearly have four different logistic areas in Europe that are related to different demographic and geographic patterns, language, and culture. They all have different and distinct trait patterns. We expect the final results of this study at the beginning of next year.

The second is a study on the integration of intermodal transport and supply chains. This study comprises two components. First, an inventory is made of technologies that could be implemented during the intermodal hull to add value to cargo.

Second, an intermodal perception index based on users' requirements will be created. This perception indicator is based on the views of more than 4,000 shippers using four different intermodal corridors.

These corridors are Antwerp to Balboa, from Belgium to the south in Spain, and for the truck shortly shipping, truck intermodal chain. A second corridor concerns Antwerp-Milan truck, rail truck. The third corridor is Rotterdam-Vienna, which is more east, also truck rail, truck. And, finally, the fourth corridor is Rotterdam-Basle, truck, barge, truck.

So you see four different corridors with four different combinations of modes. Again, we expect the outcome of this study in the beginning of next year.

For the last study we want to create a database of logistics performance indicators. Such a database is a useful instrument to monitor over time the efficiency of Europe's supply chain management. The aim of this study is to solve the problem of data incompatibility between European Union countries. This study will be available at the end of next year.

Logistics is also a topic of high priority of the community's fifth framework program for research and development, which hopefully will start at the beginning of next year.

We will have today a vote in the European Parliament, and we will have on next Tuesday Council of Research Ministers. If everything goes well, the Transport Research Program, which I am responsible for, will receive an increase of 40 percent in the resources, which I think you should not underestimate because it indicates that sustainable mobility is becoming more and more a high priority for the European Union, where the total budget for research will be almost equal.

Research projects in this area will foster innovation in the market and will aim at enhancing the quality of logistics services. They will deliver strategic tools to optimize the organization of

transport in the framework of logistical processes and will examine the optimization of legal, institutional, and organizational frameworks for logistics.

Concretely, we will be looking at opportunities to shift the transport decoupling point more downstream in the company's production cycles. We will look at legal requirements to facilitate flow management. And we'll also look at the impact of electronic commerce on logistics.

Finally, ladies and gentlemen, some words on Trilog. The commission very much welcomes the initiative of the OECD. It attaches particular importance to the Trilog Project. The reason is that for the first time, the effects of the new world economy on regional economic clusters are studied in a consistent and global manner.

Moreover, Trilog offers a practical forum for global cooperation between policy-makers and industry. And in this context, Brussels is also pleased that the United States has now accepted to chair the American task force for Trilog.

In Europe, a first plenary meeting of the European task force was organized in Brussels in April of this year. Some 20 different European countries participated apart from Asian and American participation.

In addition to the 15 member states of the European Union, representatives of the candidate countries that are negotiating admission to the committee were present as well as Russia and the European Free Trade Association countries.

At the meeting it was decided to create working groups in three key areas. These three key areas are: first of all, international interfaces of supply chains in Europe; second, innovation in small and medium-sized enterprises; and, third, the development of policy tools in the area of supply chain management to facilitate seamless international and intercontinental flow management.

These items provide for a horizontal approach to the seven items identified in the terms of reference of the Trilog Project. These will be the basis for the Asian-Pacific, the European, and the American task forces: first, globalization of transport logistics; second, regional characteristics of logistics; third, sectoral and industrial characteristics of logistics; fourth, intermodality and logistics, the role of nodal points and transport links; fifth, financing global transport logistics systems; sixth, human resources implications of global transport logistics; and, last, but not least, the evaluation of logistical systems to frame as indicators.

The output of these working groups will be used as a key input for the report of the European task force, which will be ready in November of next year.

Ladies and gentlemen, I have provided you with an overview of the most important initiatives the European Commission is currently undertaking in the areas of logistics and supply chain management.

Once again, I would like to stress that we are glad that Trilog offers an opportunity for cooperation between the three geographical regions. But I think we should also not forget that other regions more specifically, the African and South American continents, should also have access to the outcomes and the results of the Trilog work.

Now, to give you a last indication of the importance of the Trilog exercise, I have put on a slide the importance of the trade flows on the global level.

You will see here the trade flows expressed in billions of dollars. Next year when I come here, I will put it in the Euro. But today to facilitate, it will be in dollars.

And if you calculate all the trade flows between the Trilog partners, you will arrive at the total trade volume of \$1,150 billion. And if you take the two other components of South America and the rest of the world together, you arrive at the total trade flow of \$2,350 billion. And they are logistical costs.

And that means that we are speaking for Trilog about a total volume of \$19 billion. And if we extend to the rest of the world, it will become \$190 billion in logistical cost.

And if through Trilog we will be able to reduce the logistical cost by 1 or 2 percent, you will see that it is a very good investment. Therefore, I would like to wish the American task force all the best in its performance.

Thank you so much.

REGIONAL TRILOG COORDINATOR FROM ASIA PROFESSOR NEMOTO:

Good morning, ladies and gentlemen. I am Toshinori Nemoto from Hitotsubashi University, Tokyo, Japan. I am the coordinator of the Asian-Pacific Task Force. Today I am going to relate to you our activities and touch on regional characteristics of the Asia-Pacific area.

We are expanding the membership of our task force. I am the coordinator of this group, but, actually, the big boss is Professor Kawoshima from Keio University. She chaired the first logistics research project in OECD several years ago. And OECD published a very good research report in 1992.

Now, we have members from China, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, Taiwan, as well as Australia. With the help of Mr. Blonk of the EU and Mr. Ockwell of OECD, they are helping us in finding new membership, new researchers, active researchers, in the region. Thank you very much.

We had the planning meeting two years ago in Singapore, when the Trilog idea, Trilog scheme in conducting research was proposed. All participants agreed with the idea, and we started. The first plenary meeting was held in November in Fukuoka together with OECD. Mr. Andersson was kind to come to Fukuoka to make a keynote speech.

The second plenary meeting of our task force was held this year, in June, in Keio University, Tokyo. We decided the basic structure of our report and allocated responsibility among people. We are planning to hold the next meeting next June, and hopefully we can draft the first version of our report.

The structure of our report is the same as the European one. This structure holds tons of references prepared by OECD, so I'd like to summarize our report.

In the first chapter of our report, we will identify program barriers, opportunities, visions, opportunities, and so on. And one of them is globalization. More globalization is expected in the Asian area.

As you know, Asian countries have been in a difficult situation for one and a half years. But we think this is a very temporary one. In the near future, we see recovery. And the economy will be healthy. We think so partly because the countries in the Asian area have still a very high duty, Customs duties.

Within 5 or 10 years, these duties will be reduced dramatically. So we have a very big potential for growth, I think. This is very simple statistics. The number of containers handled worldwide increased from 23 million to 35 million from 1990 to 1994. It is more than 10 percent growth rate annually.

And, in particular, the share of Asia-related containers, in the intra-Asia area, between Asia and NAFTA, and between Asia and EU countries, has increased. For instance, intra-Asia containers increased from 15 percent to 19 percent.

So the number of containers handled in each major port increased. In particular, in Singapore, in Hong Kong, they now handle very big volumes. But from the viewpoint of intermodality, we don't have an efficient system in the Asian area.

The governments are eager to make big airports and big seaports, but the main roads to seaports are insufficient, usually very narrow, congested, and around in the center of metropolitan area. Also the border procedures are inefficient. Containers must stay at the port five or six or seven days before going outside. So we need the intermodal system in the Asian area especially.

Major Asian countries, Japan, Korea, China, Singapore, Thailand, are all surrounded by the sea. By nature, inevitably our transportation system should be intermodal. So intermodalism is a very important aspect in our region.

We come to the, say, structure of our report. Cross-border management is an indispensable part for efficient intermodal systems. Our barrier also has limited funds.

Under these constraints and the environment, we have to make efficient and green logistics in the region by utilizing new technology, like electronic commerce, Web-EDI, ITS intermodal system, recycling, private financing initiative, pricing mechanism, ISO 14,000, NPO/NGO, and so on, which we think are especially important intermodal systems, as I mentioned before. And they are expected to have new roles in the private sector.

I think the private sector is expected to form a global alliance in order to survive in the highly competitive situation. And also they have to consider the relation with general public, like in ISO 14,000 framework.

On the other hand, the public sector has to prepare a good infrastructure for intermodal systems, standardize the terminals needed and information systems needed. And they can raise money by internalizing the environmental externality. This mechanism should be promoted.

And the public sector and private sector should be coordinated very well. This is, say, the expected product of our report.

Finally, I'd like to express my appreciation for the effort of World Bank and DOT for giving us this good opportunity. The American experience will be informative for our activity in the Asian area. So I will bring back all information to Japan. And I will share this information with my colleagues in Asia-Pacific.

Thank you very much.

MODERATOR SCHACKNIES: Thank you very much. Thank you very much for the panel members.

There are a couple of announcements that I should make before we start the next session, but before I do that, we also invite you to ask a couple of questions and have some answers for a few minutes.

I know how important it is to have networking opportunities for all of your friends in the audience. So I don't want to cut into the networking opportunities, but please feel free to ask questions at this point. Yes, Professor Quay?

[QUESTION INAUDIBLE]

DR. BLONK: I hope I got your question right because I had a private talk before. Your question is: What is the interest of the European Commission in the inland ports compared to the seaports?

Well, the inland ports play a crucial role in the development of sustainable mobility in the European Union. We have developed a concept, which we call short sea shipping. In the beginning, in the first phase, we developed it purely from moving goods from land, being it road or rail, to ships and seaports. But we have very quickly adapted this concept and not speaking only about seaports but also about inland waterway ports.

We have, for example, research projects where we developed specific vessels that can, on the one hand, sail on the open sea around the coast of the European Union and then straight away also go in the rivers, like the Rhine or, let's say, the Seine or, let's say, the Loire. But I think we have

these concepts, and it's very clear that the more we can shift goods from land to water, sea, or inland waterways, it's supported by the European Union.

Is that an answer to your question?

[RESPONSE INAUDIBLE]

DR. BLONK: There's been tremendous development of container traffic on the inland waterways. They are very often changed in the seaports from the big carriers on the smaller ones.

But, as I said, we are promoting the development of short sea shipping from inland port to inland port or from inland port to seaport on the other side. But we are not -- as I think you will understand it, certainly in America, forcing shippers to go in that direction. We try to help to create the advantages for the sector, and it is the market that has to pick it up.

[QUESTION INAUDIBLE]

DR. BLONK: I hope that you noted that in my presentation, I said that policy-makers should not address the supply side of transport only but also the demand side. That is a clear shift that we have taken on in the European Union since the last 10-15 years.

Now, answering your question, we have created in Brussels a couple of task forces. And I will mention the one which I had the pleasure to chair on intermodality, where we have invited the most important stakeholders from all areas: the transport operators, the shippers, the freight forwarders, the industry, the logistic providers, national public authorities. And we have asked them to define for us: What are your problems?

We came up with a diagnosis report of about 60 pages. And on the basis of that, we have prepared the communication with a rather extensive action program that is now in front of the council and the European parliament, that is a communication and policy proposal based on very, very intensive consultations with all stakeholders in that area. And we do it in other areas, too. So the shippers are definitely on board in this whole concept.

MR. FINNERTY: My name is Peter Finnerty with Sea-Land here in the United States, and I would like to direct a question to Mr. Blonk and Professor Nemoto.

Years back in the European Community, a fundamental policy issue arose. And we understand that it was resolved positively, allowing for the right of establishment in trucking and in operation of port and warehouse facilities.

Could you confirm that in Europe? And then I'd very much like to know what the situation is in Japan.

DR. BLONK: I'm very interested to get that question from the biggest short shipping operator in Europe. You are running the show there. So I don't think that we have any problems with establishment on the European Union.

I would like to see the same lines for the European stakeholders elsewhere in the European area as long as we have no limitations, we have free access, as long as you respect certain general conditions, like professionalism, and credibility, etc.

MR. FINNERTY: Thank you.

DR. BLONK: But we like to see that elsewhere, too.

MODERATOR SCHACKNIES: Finally getting down to some hot button items.

PROFESSOR NEMOTO: We are rather, I'll say, conservative.

PROFESSOR NEMOTO: The transportation market in the Asian area is rather, I'll say, limited to foreign companies. But gradually the market is beginning, I think.

I myself don't have much information. My colleague will have, Chung.

MODERATOR SCHACKNIES: Yes. We do have some representatives of transport attaches from the Japanese Ministry of Transport and the Japanese Embassy answering that.

MR. CHIA: Thank you.

My name is Chia from the Japanese Embassy.

I think that Professor Nemoto's, observation is in general right in terms of the Asian area in general, but as far as Japan is concerned, I think there is no limitation in establishing the trucking companies.

My understanding is that the service itself has some long-term contractual relation with some trucking companies. And the program you are using is as a kind of service diaries. So that's the situation, I think.

MODERATOR SCHACKNIES: Thank you.

Perhaps now would be appropriate to acknowledge the presence of a number of transport attaches at foreign embassies credited here in Washington. We've extended invitations to about 25 of these transport attaches courtesy of Dr. Corinne Kamonclipschodt, who is the Chairman of the Cotton Club of the transport attaches here in Washington. You may want to talk to them during the break later on.

[QUESTION INAUDIBLE]

MR. FLORA: I've been accused of a lot of things, but supply chain management has not been one of the ones I have been accused of being an expert in, but we do have some people in the audience who are: Ron Kopicki, Marc Juhel. And, Ron, I think you've done some work on this before, haven't you? Could you answer that just briefly?

MR. KOPICKI: The World Bank has been involved in several dry port projects: one in Nepal, one in China, very likely one in Argentina. Some of the projects or all of them are justified by economic analysis, stimulation of anticipated freight, and logistics cost-saving benefits.

The short answer is yes. If you give me your card, we'll send you a copy.

MR. FLORA: Doctor, go ahead.

DR. BLONK: We are also heavily involved in the improvement of the, let's say, efficiency of the dry ports because the industry in Europe is telling us that in the intermodal door-to-door chain, about 30 percent of the total costs is to be spent in the intermodal points. And that is a handicap compared to the road transport door to door. So I'm not saying that the dry ports are inefficient, but they have to improve the efficiency in order to be competitive with the door-to-door road transport.

Now, in this respect, we are running quite a number of studies, as far as the logistics, the introduction of ITS in the intermodal ports, which are presently running, and we expect a lot out of it. So it is a concern. We are addressing it. But, on the other hand, you have also to be aware that, at least in Europe, most, if not all, of the internal ports are privately owned. And, therefore, this is an issue where we can only help them to become more efficient. But it is their responsibility to run the show.

MODERATOR SCHACKNIES: Thank you.

PARTICIPANT: This question is for Professor Nemoto. In your statistics, I'd like to know how you characterize the standard rules. Does that include flow as well as uptake? And are they seeking new equipment or the actual trains?

PROFESSOR NEMOTO: I think it takes care of the empty containers.

MODERATOR SCHACKNIES: Professor Nemoto usually doesn't answer with one sentence. He's used to pontificating at least for an hour and a half in classrooms.

Globalization of Transport Logistics

SESSION MODERATOR DECARME: Good morning.

My name is Dave Decarme. I work at the Department of Transportation, where I'm a Senior Trade Policy Adviser and the Chief of the Maritime and Surface Division in the Secretary's Office of International Transportation and Trade. I'm going to try and act as the moderator for this panel.

We really welcome you here to the opening panel session to explore the public policy issues related to global freight logistics. We have tried to assemble some outstanding talent to speak to you this morning about topics that I think you will find both interesting and hopefully thought-provoking. I have been counseled repeatedly by my good friend Bert here that we have to stay pretty much on schedule. So what we would like to try and do is have what I hope is an interactive session. Each of the speakers will provide about a 15- to 20-minute presentation. And hopefully we can follow that with a short question and answer session to get to the issues that I know are really of interest to you.

My office has really fundamentally been involved in the changes that have been sweeping the planet with respect to trade policies as they relate to transportation. The North American Free Trade Agreement, the Asia-Pacific Economic Cooperation Forum, and the Hemispheric Transportation Initiative, which just concluded in New Orleans, are all examples of how the Department has been involved in helping to develop this new trade and transportation relationship.

It was not very long ago that international transportation systems were heavily influenced by restrictive bilateral agreements and the principles of what came to be known as managed trade. Under those principles, of course, no service could be provided without the explicit consent of individual governments. However, free trade agreements, intermodal, commercial alliances, and the powerful influence, and even dependence, of many economies on export markets and many other factors, are, as you know, now conspiring to break down many of these artificial impediments to trade. We are largely better off for that trend. The old principles of managed trade promoted isolation, inefficiency, economic stagnation, and imposed enormous costs on consumers and communities alike.

The various free trade agreements now in effect or under consideration, in contrast, in various regions of the world can accelerate the need for and the pace of transportation service and infrastructure development. Such agreements increase the level of domestic and international activity and improve business rules and safeguards for foreign and domestic investors and service providers. They also promote the creation of new institutions to provide development capital.

Another area spurred by this new trade environment is that of regulatory harmonization. Under NAFTA, for example, we have been working very hard with Mexico and Canada to make our safety and operating regulatory regimes compatible for land transportation knowing that, no matter how facilitative a liberalized trade agreement itself may be, its full benefits cannot be realized with widely disparate regulations governing the point-to-point shipment of cargoes; in this case, for example, from Mexico City to Denver or Winnipeg.

So more open and liberalized trade is now the current reality. And it is that reality that allows us to reap the full benefits of the trends toward globalization and technological application that we are seeing. However, far from a process that has now taken place, even though I characterize it as the reality, we in the Department see this as really a movement that is just beginning. There is a great

deal ahead of us that remains to be done in order to achieve a fully liberalized and open trading environment.

Hopefully this sets the stage for our first speaker, who wants to speak to you about changes in global logistics as truly a revolution. Kenneth Gwilliam is currently a principal transport economist here at the World Bank. He brings to this forum a broad experience in transport logistics from the academic, commercial, and government perspectives. His academic credentials include being Professor of Transport Economics and Director of the Institute for Transport Study at the University of Leeds. He has also been the Director of the British National Bus Company and several advisory positions to the British House of Commons Transport Committee. And he also has extensive experience in project and training experience in countries around the world.

Mr. Gwilliam's current focus includes the design of regulatory systems, urban transport planning and cost recovery, highway pricing and tax systems, and national transport policy structures. He will speak to us today on what I believe he describes as the new industrial revolution as it pertains to global transport logistics.

Multimodal Transport Networks and Logistics: The Changing Role of Government

PROFESSOR GWILLIAM: Good morning, ladies and gentlemen. I feel rather embarrassed by that introduction because one of the areas where I'm not an expert is logistics. And so every time anyone asks a question, I shall say, "My colleagues over here Graham Smith and Marc Juhel and Ron Kopicki know all about this, and they'll answer the questions."

What I want to talk about this morning is particularly this issue of the role of government and to make some observations on what we should be expecting of government in the logistics revolution, as I shall call it.

The last two decades have seen enormous changes in the national and international economies. The available range and sophistication of consumer products have increased, as has the possibility of customizing products to individual tastes. The development of new synthetic materials has reduced the demand for some traditional developing country exports, such as copper, steel, and cotton, and has increased the technological sophistication of production processes. Production and distribution arrangements have become increasingly complex. And over 60 percent of production and sales are now processed directly to order, rather than to stock. Now, the sources of that revolution are complex and interacting. First, of course, there have been developments in production technology, which have allowed cheaper retooling for smaller production runs; diminishing the economies of scale in production; and, hence, facilitating a reduction in necessary stockholding.

High interest rates, of course, particularly during the '80s, have accentuated that desire to minimize stockholding. Improvements in information technology have allowed centralization of stockholding to reduce overall stocks. And, getting closer to my home, improved speed and reliability of transport has also been a necessary part of the process to support the reduction of buffer stock levels, both of components within the production process and our final products at sales and plants.

Developments in basic technical education in some relatively low labor cost countries have facilitated the international transfer of technology. And freedom of trade and capital flows, increasing freedom of trade and capital flows, has diminished the impediments traditionally associated with national boundaries. So those are the things which have permitted the great structural changes to take place. Now, the consequences are that in the OECD countries, logistics costs account for about 20 percent of the total cost of manufacturing industry, varying from less than 15 percent in the automotive industry to nearly 30 percent in the food industries. And of those logistics costs, particularly transport costs themselves account for about a quarter equally divided between transport into, within, and away from the manufacturing process.

Now, this industrial restructuring transcends national boundaries. The initial attraction for international outsourcing was undoubtedly the advantage of cheap labor in low-income countries. Originally, of course, this occurred in traditional industries, low-tech industries, such as textiles, but it has extended into more complex and higher-technology products through the development of unit construction methods, which have enabled more labor-intensive tasks; a specific component manufacture, for example, to be outsourced with only basic technology and design and final assembly being retained nearer to the high-income markets.

One of the consequences of that has been that many developing countries traditionally thought of as sources of raw materials for the manufactured outputs of industrialized nations are

now heavily dependent on their place in global production and distribution chains as a major source of growth. By bank region, the proportion of manufacturing exports or of merchandise exports has been rising for most regions. EAP, East Asia and the Pacific, are now over 75 percent on average. And for the NICs, it's over 90 percent. And, as you will see in East Asia, South Asia SAR, in Latin America and the Caribbean, they're all 50 percent all over. And also in the Middle East and North Africa M&A, that proportion is growing.

It has declined a little bit in Eastern Europe and Central Asia, but that will recover. And the region that is left out of this revolution is Africa, where there has been virtually no movement in sub-Saharan Africa with the exception of South Africa. The consequence of this trend to global sourcing is that during the last 15 years, when total world output has risen by a bit more than 50 percent, trade has more than doubled. And, in fact, for the last year, we were given a ratio of four to one, rather than the two to one that I've got over the longer period.

Now, a corollary of all of these changes is that many of the stages of production have become locationally footloose. Developing countries have been able to enter global manufacturing chains without either the basis of a strong local market for the final products or a strong local initial technological capability. By the same token, however, the location of such activities has become more volatile and the struggle to maintain position more competitive. Logistical excellence is, thus, the essential counterpart to production process efficiency for developing as well as for developed countries. What I want to do now is to actually look at the keys to success in achieving that logistical excellence and then, finally, to go on to say what I think this implies for governments. This increasingly competitive world generates new demand on the business sector and on the transport sector. And the key to success in that competition lies in the adaptation of traditional structures and processes to accommodate the new demand.

First, let's have a look at the keys to success for the business sector. Of course, there is just-in-time production. All the cycle times have been reduced drastically. Phillips International, which was an early participant in the development, reduced its average order cycle time from 23 weeks to 5 weeks between 1980 and 1990 and is now down to about 2 weeks. And that sort of performance is commonplace. Integrated business management is a second key. The trick here is to adopt a holistic approach to business decision-making involving a carefully considered trading-off between costs of production, stockholding, marketing, and transport. And within that structure are decisions on the number and locations of the points of production and stockholding that have subsequently implications, both for the quality and quantity of transport required.

During the last decade, there has been a trend within Europe to centralize pan-European distribution, particularly in large multinational manufacturing industries, such as electronics, pharmaceuticals, and vehicles. The number of major stockholding points has diminished drastically in a number of trades.

The next important element is to refine the boundaries of the firm. In many cases, the revolution in logistics has involved the setting of new boundaries to the activities of the firm. The modern counterpart of the traditional make-or-buy decision applied to input goods concerns emerging possibilities for the contracting out of a comprehensive logistic function.

A World Bank survey showed the proportion of logistics contracted out to have increased by 60 percent between 1987 and 1995 while the number of contracting parties fell by one-third over the period. For example, in the United Kingdom, about one-third of logistics turnover is already contracted out to third parties.

Now, what are the transport implications of this? In the transport sector, of course, the multimodalism is absolutely essential, almost by definition, for intercontinental transport.

Even for transport over large land masses, the combining of modes may be preferable to single mode tollage because of the different relative advantage of the modes in transport and in local distribution. The fact that at present only between 5 and 15 percent, depending on continent of land freight movements, are multimodal is because of the relatively high transaction and physical costs of the modal transfer. So the development of improved modal transfer mechanisms, both physically and institutionally and administratively, is a central requirement.

International systems integration for international traffics is equally important. For the international movements, it's the borders that are still the problem. There's a problem partly because the borders often involve a change of mode, but, more importantly, because the borders are where you hit the administration. That is true both of land borders and on land-sea borders.

Now, I think it is not something that is a necessary fact of life. It is not just something which has to do with draft awkwardness and the ability to exploit the position of being demand of Customs. I think there are market-oriented strategies that one can adopt. For example, in the maritime sector, in Malaysia, Thailand, and the Philippines, container terminals developed and managed in joint ventures with experienced international operators have contributed greatly to those countries' abilities to move things more quickly and, therefore, to meet the demands of global manufacturing chains.

The other important aspect in developing improved multimodal logistics is the one-stop shopping concept. The specialized skills in dealing with international transport facilitation and procurement provide a strong basis for the development of integrated logistic service supply. A corollary of this has been the restructuring of freight logistics, including both vertical integration to allow the offer of a single door-to-door contracted service, and substantial concentration, incidentally, in some of the shipping trades. Now, for that to happen requires considerable freedom to contract and considerable freedom to price. And some of the great changes that took place on this continent in the early '80s in terms of logistic structures were associated with a new liberalization on pricing freedoms and on contracting freedom.

Now let me move on to what really is the focus: the role of government. As I have argued, the essence of modern logistics is the systematically integrated treatment of the procurement, production, and distribution processes. Those directly involved in the industry or industries are, I would argue, are those best able to judge what is needed to optimize their systems. The guiding principle, therefore, should be to allow as much entrepreneurial freedom as possible in selecting transport and logistical arrangements. The critical question is: What is as much as possible? Where should the state still be involved? Where should it keep out of the hair of the private sector?

Briefly, infrastructure, infrastructure provision and financing. We have gone through a spell over the last five years in which, I think mistakenly, we have taken the view that transport infrastructure is something which can be looked after by the private sector. There are clear areas where there is a very important role for the private sector, but if you think about the possibility of genuine freestanding private finance, toll roads which can actually finance the full capital costs, probably not more than 5 to 10 percent of transport networks in most countries fall into that category. That may be on the high side. And we're now going through a period of renewed pessimism or maybe renewed realism about the role of the private sector.

Now, where I think that leads us is not to say we should give up and say this is a matter purely for the state, but I think what it does yield for us is a new set of questions, a new set of challenges as to how we assemble and assess the public contribution to public-private partnerships.

That I think is a different way of presenting the problem and one in which I think there are some very important challenges of an intellectual kind in deciding where and when a public contribution and how big the public contribution should be to a private sector development.

Infrastructure maintenance. Of course, being in the World Bank, you would expect me to give the plug for this. This has been one of our great messages for the last decade and a half, and we are presently concentrating very heavily in our own activities on trying to get our client countries to think about the institutions and particularly the possibility of commercializing the institutions to ensure that maintenance is well looked after.

Given that recent developments in logistics may increase the relative attractiveness of road haulage and that road haulage is likely to be environmentally more damaging than rail or waterway freight transport, I think the next question the governments have to face is whether that doesn't imply that they should be intervening more to manipulate modal choice and particularly to determine what modes can and cannot be used.

Well, I think they shouldn't. Because governments are typically ill-equipped to decide what are the optimal or what are the true costs of their interventions, they should try to limit themselves to operations through price incentives. If they really attach a very high value to the environmental impact of road traffic, they should be setting high taxes on the pollutants, preferably on the outputs, rather than on some proxy, but, if necessary, on some proxy.

If, as is sometimes argued against the price mechanism, well, it won't have any effect. The logic of that, of course, is that the real costs of the change are so high that putting a high price won't affect the activity. And the logic of that, of course, is that it is probably not a very good area in which to be meddling anyway and that the decisions should not be subject to intervention. So I would argue that price inelasticity is a very good reason for nonintervention and not a reason for trying to find some other means of intervention.

Liberalizing transport operations seems to me to be a very important contributor to the development of efficient logistics. In the maritime sector, many governments have already encouraged private sector finance and management of ports and have abandoned traditional flag protection in shipping. The direct effect has certainly been that the national share in some markets has been diminished as competition has intensified. And some countries have argued that is a bad thing, that is a reason why we shouldn't be pursuing these policies.

But, of course, that isn't the real test, and shouldn't be the real test of deregulation. Rather, one should look not at the effects on the shipping trades themselves, the national shipping trades, but at the national economy. Reductions in terminal-handling costs, which have been up to 70 percent in some cases, in maritime freight rates, which have fallen between 13 and 50 percent in Latin America over the last decade, those effects benefit importers and exporters, producers and consumers alike while gains from protection tend to be very narrowly channeled to ship-owning and sometimes maritime employment groups. And even then, of course, such a large proportion of the inputs in the shipping business are brought internationally, equipment bunkers, sometimes labor, that the real effect on the national economy may be minimal.

As far as the rail sector is concerned, rail privatization in Latin America has shown how much can be achieved through commercialization and privatization. The total economic benefit of rail privatization in Argentina has been estimated as being about US\$1 billion per annum. As far as road freight is concerned, commercial freedom of the road freight industry has contributed particularly to reducing logistics costs in Europe.

And experience in the United States shows that there was a substantial change of trend in the relationship between GNP and transport costs associated with the point of deregulation. Now, going

along with these changes in the transport sector, there are, of course, changes in the information network. For traffic to flow smoothly and to meet the quality requirements of the logistics revolution, there must be no failures in the associated flow of information.

There are three important, particularly important, areas here. The first, of course, is telecommunications. Telecommunications liberalization has worked wonders in many of the developing countries. An ISC study in the early '90s showed international core completion rates rarely over 50 percent and less than 20 percent in countries such as Ghana, Pakistan, and Ecuador. With the increased trend to privatization of telecommunication sectors, those numbers have changed dramatically and radically.

The second area is harmonization of documentation. Again, I think many of you know much more than I do about this. But this involves to some extent businesses in their own documentation processes but also involves more sophisticated arrangements in which information can be exchanged and, yet, protected at the same time or the aspects of it that need protection can be protected between importers, exporters, ports, airports, freight agents, forwarders, and so on. I think there is still great scope for those developments.

And then, finally, Customs administration. I've mentioned this briefly earlier. Efficient Customs administration is also an important contributor to the efficiency of a country in logistical terms. And the case that I quote in the written paper is that of Mexico, where a reform at the beginning of the '90s and the end of the '80s involved comprehensive overhaul of the Customs and taxation system. The World Bank survey assessed the cost savings of this reform as over US\$2 billion, representing 5 percent of the total merchandise trades or 1 percent of GDP. So obtaining leverage on this is an important challenge for us. So what does all of this add up to? From a policy viewpoint, it seems to me that the critical feature is that the complexity and situation-specific nature of the logistics process means that only the commercial enterprise can really determine what the appropriate structures are. The role of the state must not be to decide what is the best arrangement for firms but to ensure that firms take into account the social as well as the private cost of what is appropriate and the state facilitates the adjustment process.

So, finally, what does that leave the state to do? I think it leaves five main issues on its agenda: first, to create an enabling environment, which permits the private sector to provide infrastructure and services as efficiently as possible on a commercial basis; second, to efficiently provide and maintain public infrastructure, including modal transfer infrastructure, where this is best provided by the public sector; third, to charge users of public infrastructure a price representing the full cost to the society, including internalization of externalities and to structure the collection of that money so that the facilities are properly maintained; fourth, to identify and eliminate the remaining constraints, which in some countries are small but in some countries are still very large, on the capability of the private sector to respond to market and technological changes; and, finally, fifth, to eliminate distortions created by national Customs and other trade practices.

That I think is quite big enough of an agenda for government without it getting involved in trying to second-guess the private sector on essentially commercial judgments on mode choice.

Thank you.

SESSION MODERATOR DECARME: Ed Emmett is well known in Washington transportation circles. That may be an understatement. He is the President and Chief Operating Officer of the National Industrial Transportation, or NIT, League, the oldest and largest shippers' association, representing businesses of all sizes, using all modes of transportation to move goods in intrastate, interstate, and international commerce.

Before joining the league, in 1992 Mr. Emmett was Commissioner at the Interstate Commerce Commission, appointed by President Bush in 1989, and was Vice Chairman of the Commission in 1991.

Prior to coming to Washington, Mr. Emmett had a distinguished career as a representative in the Texas State legislature, where he served as the Chairman of the Texas House Committee on Energy and was a member of the House Committee on Transportation.

One recent article I read stated quite succinctly that Mr. Emmett has emerged as the unchallenged voice of shippers on Capital Hill. He's a stalwart proponent of transportation deregulation. His most recent accomplishment was his mediation of a compromise among shippers, carriers, port interests, and organized labor that permitted the passage of the Ocean Shipping Reform Act.

Ed is here today with us to express his views on shippers' needs in the global economy, a topic of increasing interest at a time of increasing globalization and open trade.

Transport Implications of Current and Proposed Multilateral Trade Agreements

MR. EMMETT: It is indeed a pleasure and an honor to participate in this type of symposium on global freight logistics. As President of NIT League, obviously we have a great interest in that. And the members I represent have a great interest in global logistics.

But what's been fascinating to watch in my six years at the league is how that interest has grown. Prior to 1992, I doubt seriously if the league had ever engaged in any international activities. And now I spend probably a third to a half of my time engaged in international.

I've gotten to know folks in Europe who I never anticipated knowing. I've traveled to Asia. And all of that is in a role that prior to about 1992 was seen as purely domestic. So this type of forum is critically important to league members. But obviously it's critically important to the world economy, too.

The original topic I was assigned, in case some of you are confused by looking in your book, was transport implications of current and proposed multilateral trade agreements. I don't know anything about that.

So I called up the powers that be and said: Can I change topics? And they said: Sure. You can change to suit yourself

At the beginning, let me state an obvious fact, which is too often overlooked. And that is, quite simply, that modes of transportation and the infrastructure which they utilize exist for one reason. And that one reason is to serve customers.

Public policy must always recognize that. Otherwise we end up protecting the status quo at the expense of progress or, worse yet, we make changes that don't reflect the needs of the users of the transport services. So we have to keep in mind why transport exists in the first place.

Now, for many years, I've used an analogy to describe the importance of logistics. Some of you in this room have heard this over and over, and I apologize in advance, but you're going to hear it one more time because it's a fairly simple way of looking at logistics.

And that is that all of us know that our personal health depends upon the free flow in our circulatory system. Every time you go to the doctor, you get a lecture about cholesterol. You know it. You know it's coming every time you go. Any clog or blockage anywhere in our veins or arteries can have devastating effects on our ability to function and even survive.

The same is true for an economy. The economic health of a nation or a region depends on the free flow of commerce, the free flow of raw materials, the free flow of finished products. Any blockage of that transportation system which allows the flow can damage the health of the economy.

Now, during the course of history, our definition of the economy has changed dramatically. Markets used to be local or perhaps regional. But, for a lot of reasons that I don't need to tell this group -- you obviously believe it because you're here -- those markets have now become global.

And, as a result, we need to make sure that this free flow occurs on a global basis.

By our presence here today, I assume we already agree on that point. So what I want to do is turn my attention to the matter of maintaining the health of that global economy by clearing blocked arteries and outlining a logistical diet and exercise regimen, which will ensure the continued free flow of freight and the health.

As the global economy has developed, one positive force has been heightened: shipper awareness of policies and practices in various countries. Many more companies now participate in global commerce. As I travel through the United States, I have what would be considered small Mom and Pop operations that never would have thought about doing business overseas who now want to talk about logistical matters involving international commerce. It's absolutely amazing to see that change.

Now, the natural result of that increased awareness has been a strong push for uniformity. A shipper, whether they're small or large, in the middle of the United States doesn't understand why they can do business one way in one place and they have to do business a completely different way somewhere else. And so they started pushing for uniformity.

When you push for uniformity, you can have two approaches. One would be to get every government in the world to agree to do things the exact same way. That's not going to happen.

The other way to get uniformity is through deregulation. And that's something that can happen and, in fact, is happening. The most recent example is the passage of the Ocean Shipping Reform Act in the United States. The league obviously had a major role in that. But what really made that happen, as was mentioned, was the ability of the shippers and the carriers and the ports and the labor unions and the various interests all to come together and to reach a compromise that they could all embrace.

With each additional step toward global deregulation of all modes, the flow of goods becomes freer. And, as more commercial freedom comes about, many phrases -- and I, too, am not a logistician, so I don't pretend to understand exactly how all of these things work, but the phrases like "supply chain management" and "seamless transportation" and "uniform liability" become a reality for more and more shippers. What is speeding this process is a new sense of partnership between shippers and carriers.

In the days of heavy-handed economic regulation, the system pitted carriers against their customers with the government agency normally acting as the final judge. That system is being replaced by one where shippers and carriers must negotiate in the marketplace so that both sides benefit.

Too many people -- and I will point to the shippers as being the culprit in this, certainly as often as the carriers. Too many people want this to be a one-way equation. And it can't be.

If both the carrier and the shipper or if there's a third party involved, the third party, if they don't all benefit, then it's not going to be a lasting relationship. And it's eventually going to cause serious problems to the free flow of goods. So we all have to emphasize over and over that all parties to the transaction have to benefit.

Now, in addition to deregulatory policy changes, there have been other positive market forces that have been set in motion. The creation of the European Union, the rise of market economies in former communist nations, in addition to the deregulatory initiatives, all point toward a healthier global economy in the long run via the free flow of commerce. But there are still numerous problems to be addressed.

A vague overriding structural problem is the way governments are organized to set and administer transportation policy. Most countries have modal administrations, which, unfortunately, don't always cooperate. They don't always talk to each other. In fact, sometimes they even compete, whether it's for funding or whether it's for the attention of the transport minister or whatever.

Somehow we have got to get to cross-sector expertise within governments. And certainly that's beginning to happen, but it needs to be sped up. We can form offices of intermodalism, which obviously is being done in many countries, including the United States, but if it's a separate

operation and it really doesn't integrate the various modes, then perhaps it's not going to accomplish as much for the shipping community as it should. In an ideal world, each and every country will view freight transportation as a single entity, rather than having separate agencies promoting individual modes. And only through such a unified approach can the shipping public be optimally served.

Numerous specific policies, such as various countries' port practices, still distort the free flow of goods. Hopefully most of these can be addressed either through bilateral negotiations, multilateral negotiations, or through broad-based organizations, like the OECD. It will not be easy. We've seen that already. There are cultural factors that come into play. Somehow we have to overcome that.

In addition, the port practices' new regulatory regimes could in the future hinder global commerce. For example, it would be truly unfortunate if, at the same time the United States eliminates tariff filing and enforcement and allows confidential contracts to go forward so that people can begin to structure their global logistics in a market-based system, some other countries begin to put into effect stringent tariff filing and enforcement regimes that negate everything that's been accomplished here. All of us, I think owe, it to the system to make sure that doesn't happen.

Other obstacles in the way of truly free global logistics are not specific to any country. The recent trade imbalance between Asia and the United States has created a logistical nightmare for the positioning of containers and for the pricing of carrier services. You know, if you just think about it, if you have 100 percent of traffic going one way and empty going the other, to have the extreme example, how do you price that product? You can't charge anybody going back empty, but yet, you have still got to get those containers back. And shippers I think are stepping up and realizing that they need to work with the carriers where these imbalances occur, and they need to figure out ways to address them. Obviously governments are going to have to be a part of that, too.

We all hear about the year 2000. It's looming. It's out there. There's this great cloud: the year 2000. We get letters at the league all the time saying: What are you doing about Y2K? Well, the worst thing that could happen is maybe our members' dues won't be sent out at the right time. I can't imagine that it's going to affect it, but, yet, major corporations worldwide are generating great amounts of paper to ask people like me: What are we doing about Y2K?

Everybody is worried about it. And it is something that we are going to have to address. But what is really frightening is that in the end, logisticians are going to be reliant upon the computer engineers. Now, my staff made me change that. I normally refer to those people as computer nerds because I don't understand what they do. And you'll notice I'm not using Powerpoint. That speaks more to my abilities than to theirs. But in the final analysis on the year 2000 problem, logisticians are going to be reliant upon the talents of computer engineers to ensure their ability to keep the stream of commerce flowing.

And not to pick on a company, but in the very recent past, many, many companies went to a particular software which was supposed to manage their entire system. And it was going to have stock replacement and everything. And all of you know who I'm talking about probably. The problem is they had no transportation component originally. And so that was all great, but it didn't do anything for the logisticians.

I think that there is a fear out there that the year 2000 problem-solving may not be as focused on transportation component from the shippers' point of view. The carriers, yes, they're dealing with it, but from the shippers' point of view, that's something that needs to be addressed.

The rise of trading blocks and in the case of Europe the development of a new currency will offer expanded opportunities for creative approaches to logistics, but none of us should be deluded into thinking that these changes are going to be easily worked into logistical operations.

I've started trying to read about the Euro. I can't even begin to express what some of my members are saying when they have to start shipping. And it is easier, I mean, if you think about it logically, to have one unit of currency, but change doesn't come easy to anybody, doesn't come easy to somebody who used to be called a traffic manager and is now called a vice president of logistics. But they're used to dealing with those currencies, and that change is not going to be easy. We need to be aware of that. Much of what I just mentioned has been negative. And lest you be left with the wrong impression, I must emphatically state that I am pleased with recent history and am optimistic for the future.

As more and more companies engage in global logistics, old barriers come down. Multilateral negotiations with some exceptions are changing tone. It used to be that each country came in and negotiated from a position of protecting specific interests. I believe that there's a bit of new openness in many of these negotiations that may allow all of us to seek less myopic answers.

What will really energize the movement toward effective global logistics will be the involvement of shippers. The professor who stood up and asked the question about involvement of shippers, I didn't know he was going to do that, but that's the question everyone should ask. Each country's delegation should always include representatives of the shippers, the people who own the freight. After all, that's who global logistics are designed to serve.

Sitting in the back of the room during the first panel, it was brought home to me the regional structure of Trilog. And this is I guess more a testimony to my ignorance than to anything else, but we have an organization called the Tripartite Shippers Meeting, which meets once a year, but we communicate almost weekly. It's the European shippers, the North American shippers, and the Asian shippers. And we communicate constantly. To my knowledge, we were not even aware of Trilog.

And, to put that even in more perspective, I believe it was just last month -- I attend the Maritime Transport Committee of the OECD as an observer with the U.S. delegation. And I have been going to that now for several years. And maybe I was asleep, but I don't know that Trilog was ever mentioned. And so we're not talking to each other.

I run into people in this room who are participants in all of those other things I just mentioned, and I'm saying: Why haven't we talked about this before?

So, if nothing else comes out of my talk today, I will pledge to you to do anything that the league can to involve not only North American shippers but the rest of the tripartite shipper community because we firmly believe in what is being done here with Trilog. And we definitely want to be a part of it and look forward to working with you in any way possible. And I certainly look forward to receiving your questions and comments in a few minutes.

Thank you very much.

SESSION MODERATOR DECARME: Thank you, Ed. Well, as has been mentioned, clearly one cannot talk about globalization transport logistics without acknowledging the large role played by maritime transport. Today we have someone very well-versed in international maritime transport matters to share his thoughts with us on this important sector.

Bruce Carlton is the Associate Administrator for Policy in International Trade at the U.S. Department of Transportation's Maritime Administration. He is the senior career official responsible for the Department's international maritime activities, including bilateral and multilateral negotiations, and serves to direct the overall policy development and implementation for the agency.

Bruce has over 25 years' experience in international trade and maritime transportation matters. I've had the opportunity to work with Bruce over the last few years on a number of important international maritime issues. And I'd just like to say that the experience shows. The Department benefits significantly from his skill and personal aplomb in addressing international transport matters.

This morning Bruce is going to finish our panel discussion with some thoughts on ocean shipping reform and its implications for global intermodal transportation.

Ocean Shipping Reform and Implications for Global Intermodal Transportation

MR. CARLTON: This is sort of like old home week as I look out at this audience. I know so many of you as DOT colleagues, industry friends, and international associates from so many of the embassies here in Washington. It's a real pleasure to be here. And I was really very thrilled and honored that the conference organizers asked me to spend some time with you this morning to talk about the Ocean Shipping Reform Act. Let me note at the outset that, like my friend Ed Emmett, I have not been licensed to operate Powerpoint. So you're going to have to listen to me talk through this. There will be nothing on the screen.

I apologize that my remarks were not done in time to include them in your books. I'll make sure that a disk gets to the right person so that we can follow up later if anyone has that degree of interest. I also need to note at the outset that the -- I'm not sure who to give the credit to: the OECD or the organizers of the conference directly. But this is probably one of the best practical jokes that's ever been played on me.

I was asked to talk about the Ocean Shipping Reform Act, and I really jumped at the opportunity. It's something I've spent a lot of time on for the last three years. But nobody told me that the godfather of the act was going to be sitting next to me on the panel: Ed Emmett. The reason there was an Ocean Shipping Reform Act actually signed by the President this year can be summarized very succinctly by just simply saying, "Ed Emmett."

He worked tirelessly on this. He invented it. He shepherded it. He built the coalition of shippers and carriers, the international community, labor unions here in the United States, port interests, etc. And it's a little bit intimidating to try to give a talk on ocean shipping reform with the godfather right here. But I'm going to give it a try.

Without question, the most important political development in recent years in the United States for the business of ocean liner shipping is the enactment of the Ocean Shipping Reform Act of 1998. And that's the last time I will say that, I think. I'm going to use the lingo that has now developed as OSRA, the Ocean Shipping Reform Act. The President's signature on this landmark legislation brought to a close an exceptionally vigorous debate on the future parameters of competition in ocean shipping services to and from the United States.

Even though the debate has been resolved in favor of those who sought to change the rules, it's pretty clear that we have not heard the last from the opponents. Indeed, the central matter for resolution since the bill was introduced in 1995 was whether the votes would maintain the status quo or whether we would enter an era of new rules for competition in ocean shipping. The answer has been delivered. And that new era begins on May 1st, 1999.

The question that falls out of my assigned topic is: What is ahead in the United States and world shipping market now that we have altered course and changed the rules?

I'll admit at the outset here that I really don't know the answer. I also don't believe anyone else knows the answer. We're all interested observers. We're all interested students. And we're going to have to just wait and see. But I'd like to try to prod that process by walking through some of the dynamics of that marketplace.

In the early part of this century, the United States established benchmarks for antitrust policy, what our European friends call competition policy. The Sherman Act and the Clayton Act clearly outlawed collusive behavior in setting prices. But within only two years of passing the Clayton Act, the Congress passed the Shipping Act of 1916.

This act gave international liner shipping a limited exemption from these antitrust rules. At that time, the Congress accepted a rationale that this was a special industry. It had international reach. It had international ramifications. And a limited exemption was appropriate public policy. The price of that limited exemption was a degree of regulation and oversight by the federal government. The regulator, which today we all know is the Federal Maritime Commission, was charged with policing the collusive agreements reached by ocean shipping conferences.

Their rules and our Shipping Act were designed to make these shipping activities transparent. Freight rates had to be filed at the regulator's office. Carriers could not discriminate between their customers on the basis of price. All meetings and agreements between carriers had to be filed and so on. Greatly simplified, it was considered okay to collude so long as that collusion occurred in the bright sunshine. It's important to note briefly that the government's role in this particular activity, ocean shipping, was never the equivalent of its role in the other modes of transport here in the United States.

Our experience with rail, truck, and aviation services was far different and far more intrusive. These modes were governed by extensive regimes of rate setting, rate of return limitations, and elaborate rules for market entry. That's why I personally don't believe that the deregulation experience that we have witnessed and recorded from these industries is a particularly good model for predicting the future in international ocean liner shipping.

Basically the attitude of government in liner shipping outside of the limited exemption from antitrust was that anyone foolish enough to invest their money in ocean shipping go right ahead. It's a sink-or-swim marketplace. And, as we have watched what has happened over these decades, a lot more carriers have sunk in their attempts to stay in this business than have succeeded.

The 1916 Shipping Act was amended many times. And especially a very significant amendment occurred in 1984. Unfortunately, I've been doing this so long now that I recall all of that debate, the long history of making the '84 Act a reality. Like so many pieces of legislation in Washington, the '84 Act actually began in about 1978-79. These things don't happen overnight. And in that perspective, the Shipping Reform Act of 1998 was a rather quick affair.

But none of the amendments that have occurred previously have had the profound implications for change than has OSRA. Let's take a very quick look at some of these new matters, some of these new provisions, which I think are going to alter the competitive landscape but probably in ways we don't completely yet understand. As I said, the 1916 Act was built on a concept of transparency. Everyone in the shipping business — and that includes shippers and carriers, both here and abroad — knew what everyone was charging or being charged.

Tariffs were filed at and approved by the FMC. And they were accessible to the trade or at least they were accessible to the few of us who knew how to read ocean shipping tariffs and could decipher the information that was filed in all of that paper. Service contracts came along later. The terms and conditions of those contracts were also publicly available.

The new law is going to convert this transparency to what I would call opaqueness. The tariffs are going to have to be publicly available, but not at the FMC. And we have to wait to see how this happens. Of course, everyone says it's going to be on the Internet. For those of you who really know how to use the Internet, have at it. Some of the terms of the service contracts are also going to be filed in public format. And the key pieces of information, price of the shipping, are going to remain confidential, along with other important competitive information on origin and destination points and service commitments.

For the first time, shippers and ocean carriers are going to contract for business on a confidential basis the same way nearly all other private sector business gets done. Everyone in this

room I think understands the magnitude of that change. For people who don't do transportation, they're going to probably be underwhelmed at the concept since this is how they do their business on a day-to-day basis.

Moreover, while earlier laws require that all similarly situated shippers must be treated the same, carriers are now going to be able to discriminate between customers in their service contracts. And both shippers and carriers may now enter into service contracts, either individually or as groups, which brings us a potential for joining together enormous market power and enormous market share to bargain for the best deal on both sides of the transaction. There are quite a few other provisions in the new law, including some strengthening of the Section 19 protection language, language dealing with state-owned carriers. But we very quickly get into some really obtuse stuff. And I'm going to leave it to the Maritime Bar Association to deal with the greater details.

Suffice it to say that whatever we thought we knew about the regulation of ocean shipping here in the States is now history. And I probably would take that one step further by saying that everything that we know and knew about ocean shipping generally, not just the regulation of ocean shipping, all of that is history. We are totally redefining the competitive landscape.

In the last 10 years, we have seen an explosion of mergers and acquisitions; vessel-sharing agreements; space charters; joint ventures; alliances, both grand and not so grand; and every possible scheme of rationalization. We have seen containerization not only take hold of the dominant format for liner shipping, but we're now seeing ships with capacities that we simply could not have imagined in the last decade.

We're seeing ship speeds jumping up dramatically. All of this has been overlaid with every conceivable application of the latest information technology for tracking cargo worldwide and routing those cargoes through the most efficient intermodal connections. A question to consider is: Was the Shipping Act, 1984 Act, in its latest form an anachronistic regulatory policy or had market forces simply redefined the rules in a way that made its usefulness highly questionable? In my mind, the answer is yes to both.

In the complex interaction of market forces and government regulatory policy, we have a situation that is similar to the laboratory chemist trying to induce a chemical reaction between compounds that don't normally like to mix and join. When that happens, the chemist uses a catalyst to enable the reaction to go forward. And I think as the years go ahead, we're going to look at the OSRA as a catalyst for carriers and shippers. What we don't know, though, is what new compounds, what new devices they are going to come up with.

Are there any conclusions that we can draw from all of this? I think that there are, but I would begin with one caution. I think it is a huge mistake to think of the various market and regulatory changes that I have been mentioning here this morning, as parallel economic forces working somehow side by side. On the contrary, I very strongly believe they are convergent at some point in the future. Just as the artist uses a technique of drawing in perspective with a vanishing point out in your mind's eye distance to give real depth to his canvas, I think the forces that are at work here are going to converge at some point. I hope it's not a vanishing point, but they will converge. And what we will have, then, is a new marketplace.

What's going to happen? I don't know. I don't think anybody in this room knows. But let me give you a very short list of things I think we're going to see in the fairly near term. First of all — and this is probably the one that I think we could get more agreement on than anything else — is that the conference system as we know it is going to be radically altered. The new rules are simply too tempting to the best carriers to go along with the pack.

Confidential pricing on large-volume service contracts is going to inject a degree of competition the likes of which we have never seen. The top-tier carriers — these are the carriers where service and value-added are the corporate hallmarks — are going to leap at this opportunity to

expand their market share. And the discipline of conference pricing and the high-volume container trades is going to disappear quickly in the rear-view mirror.

My second point is a corollary from that. We're going to see a greatly diminished level of freight moved on a tariff basis and a complementary increase in service contract tonnage.

Next — and I think this is where it starts to get a bit more difficult and a bit more debatable — I think we're going to start off this spring with a new round of price reductions. We may not know the price after May 1 in the same sense that we know prices today, but the signs are going to be obvious.

Right now virtually every executive I have spoken with on the shipping side of the equation, the carrier side of the equation, will tell you that they're not making any profit or they're making very little profit.

And the reasons given are always the same. It's too much capacity. And the trades are so imbalanced worldwide, as Ed had indicated earlier, that it's a nightmare for the pricing department.

But I don't believe that this is going to have much impact at all on an enormous urge to cut pricing in this first round to lock in the trophy carrier shippers. From this and the already frenzied pace of alliances, partnerships, and mergers, my fourth observation is that we are nowhere near the end of the reorganization of the worldwide shipping industry. And the trend is big, bigger, and biggest. The surviving companies are going to offer extraordinary customer service, but I am a bit concerned about where that all leads. If at the end of the day we end up with one or two giants and a set of second-tier niche players, then price competition may begin to erode as rapidly as it started up.

Instead of a conference or a group of conferences controlling rates, we might have just a few mega carriers driving mega ships in and out of mega ports. My last point, and it's a point that Ed also raised, was that it would be naive to think that this is the end of the regulatory reform process worldwide. I think it's imperative that we pay close attention to what's going on outside of the United States. There are a lot of countries that have regulatory reform on their agenda. And it's important that we reach some degree of conformity in the world shipping rules.

Anyway, these are my views. I'm not sure that they were unique or profound. But I think that we're going to look back and consider the Ocean Shipping Reform Act as a catalyst to allow this marketplace to change and evolve, to be more efficient, more competitive, hopefully more responsive to the needs of customers.

And I will use, if I can, the ending that Professor Gwilliam had, which is that the government is creating an enabling environment and freeing the private sector to respond to changes in the market.

Thank you very much.

SESSION MODERATOR DECARME: Thank you, Bruce.

Well, I promised that the panel would provide presentations that were interesting and hopefully thought-provoking. And I certainly think they've delivered on that promise. And I thank you all.

I think we have about 10 minutes for some questions. And I see lots of hands going up already.

[QUESTION INAUDIBLE]

MR. CARLTON: I can give you a reaction. I can't really shed much light on it. I think that the blindly stated view of the obvious is that those two companies have really found a way to exercise their market power to extract what's bound to end up to be an outstanding arrangement for them as carriers. And I'm sure that the shippers are hoping to share in some of that.

I've had an opportunity to talk with a couple of the port people in recent weeks and sure got their attention. I think it's perfectly rational behavior on the part of the carriers. They are offering an exclusive 25-year deal with an enormous load of traffic. And, in return, they're expecting something of a like magnitude. Beyond that, I'm not sure where that goes.

I think it's probably the next logical step in the rationalization of the American ports. I think a lot of us in this room and outside this room have talked for years that as ships got bigger, as load centers became at least the apparent way the carriers were going to conduct their business, that not every big American port was going to stay a big American port. Somebody was going to get bigger. And I think that the action that Sea-Land and Maerster are taking right now is going to propel that process.

It doesn't mean the other ports are going to disappear. The country is too big. There's too much traffic. They're not going to disappear. But just who is going to be serving the first tier? Who is going to be serving the second and third tiers?

SESSION MODERATOR DECARME: Okay. Let's go back to Lee's question. Lee, do you want to ask it again just for the benefit of everybody so they know where the answer is coming from?

[QUESTION INAUDIBLE]

PROFESSOR GWILLIAM: I guess that my view is that the regulation is an invitation to capture. And, of course, the strength of the position of organized labor is often associated with the fact that there is regulation which was for some other purpose so that going back through a number of subsectors, you can find regulatory forms, which was supposedly nothing to do with labor, which were captured by labor.

I come from the U.K. bus industry background, where, in fact, the regulation which was supposedly to deal with excess competition in the '30s actually became the basis for very slight operating practice, unduly high wage rates, and so on, in the sector.

The first thing to do is if, of course, you have the strength to just bash into it, then competition will deal substantially with a lot of the traditional practices.

Again, my background in the busing industry in the U.K., the times were very ripe for deregulation. But subject to the new rules, it was amazing how quickly labor unions were able to adjust to actually change the relationship with the employer and find a new role in a rear-entry industry.

The second comment I would make is that if you have to face the process of regulation, the process of privatization, then one of the standard objections is the costs are going to be so enormous of buying out the old practices. What I would say about that is do the sums.

I've just been in Bangkok recently, where, again, I'm sorry this is not logistics. This is the bus industry, but there is a statutory monopoly pertaining to the metropolitan transport authority, BMTA.

And if you actually do the sums and you say, "How many people are they employing?" What do you think they would expect to be brought out of that kind of employment? And what is the current subsidy?

My quick calculation was it was a one year's purchase at a very high price. And after one year, you were in for a much brighter future.

So in the case of a number of the activities where in the bank we have been involved, we are now, fortunately in the position that we can actually assist countries to confront that issue.

Originally we had to do it through a rather devious way with structured lending, but it is now possible in some circumstances where there is an economic benefit to be seen from actually buying out contracts and associated retraining to actually do that.

So I think the answer is that governments, firstly, need to look at the possibility simply of going ahead with a reform which leaves in place the old labor structures but allows them to be undermined by the subsequent process of completion.

Secondly, in cases where that is not possible but, actually, it's worthwhile looking at what the costs are, what the benefits are of doing the funds and then actually biting the bullet and buying off.

SESSION MODERATOR DECARME: Any other questions? We have time for two more quick ones.

MR. FINNERTY: Peter Finnerty with Sea-Land.

I'd like to ask all three of the members of the panel a question that ties into some of the things each of you have said on what I think will be next year's debate over harbor maintenance fee.

Ed, the league was very much involved in the legal challenge to the existing system, which was started back in 1986 by the federal government to fund channel deepening here in the United States.

The new proposal that the administration has tabled earlier this year appears to be still, although they call it a user fee, very much an ad valorem tax.

I'd be interested in your reactions to what is the optimum approach to this, not necessarily just this system, but the role of government in providing infrastructure is what we've talked about. And, yet, this new system that's being talked about here in the United States looks to be such that it may well impede channel improvement and healthy competition between ports by imposing unnecessary costs on the shippers and the marketplace.

MR. EMMETT: There's not a short answer to that, but I'll try. Any fee or tax that is ad valorem is not going to pass constitutional muster because it can't be a user fee at that point because the value of the product on the ship really has nothing at all to do with the cost of that ship coming into a port.

Having said that, if you try to go to a system that's just on tonnage or just on the number of entries and exits to a port, then you get into the situation of bulk commodities suddenly finding themselves perhaps not competitive in the world markets.

And so you'll have all of those interest groups opposing that, which I think is why the ports and other groups have come forward and said harbor maintenance really needs to come out of general revenue because that's perhaps right now the only one that would pass constitutional muster and would be acceptable in terms of the export markets.

The problem with that is — and I've said this privately; I'll say it publicly — the ports want that, but I think in the long run if they look up and are having harbor maintenance come out of general revenue, it doesn't take you long to figure out that in the very near future, some member of Congress is going to say, "Wait a minute. We're spending this many millions of dollars. Why should we be spending it on the number of ports that we're spending it on? Why should we not focus?"

And that would feed into the discussion Bruce had earlier about the rise of mega ports and second-tier ports and who gets funding. That, Peter, is probably going to be the thorniest issue. We don't have an answer for it.

The ports, like I say, are pushing general revenue. And I think in the final analysis, that might happen, but that may lead to consequences that the very people who are pushing it might not want.

SESSION MODERATOR DECARME: Bruce, do you want to say anything about that?

MR. CARLTON: That was a very learned answer.

MR. CARLTON: I think Ed has really put his finger on it. This debate may take us places where we don't really want to go politically. And fundamentally it is going to be a political decision.

The only thing I would add to it is that as attractive as financing from the general treasury might be — and, in fact, it is attractive — we have already spent the current budget surplus about 10 times by my reading of the newspapers, whether it's Social Security or education or health care or whatever. And, unfortunately, in all of the articles of how we were going to spend that surplus, I haven't seen this one even enter in yet.

So we shouldn't lose sight that all of the budget rules, all of the discipline that the Congress imposed on itself some years ago now, all of that structure is still in place.

So it's not like we can just simply make that disappear and say, "Well, we have the money. So spend it." It's not going to work that way.

SESSION MODERATOR DECARME: Okay. I think we have run out of time for questions here. I invite everybody to visit with the individual panelists. They'll be around and hopefully some of them for lunch. You can ask them anything you didn't get a chance to here.

Thank you very much.

LUNCHEON GUEST SPEAKER

MR. WYKLE: It's a pleasure to introduce today's speaker. He's the leader of the trucking industry in Canada, the United States, Mexico, and other parts of the world.

The international scope of his operations and his global business perspectives certainly make him a prototypical partner in promoting efficient transportation services to meet the global logistics needs of the 21st century.

His transportation and logistics company is one of the largest in the world, with gross revenues exceeding \$2 billion in 1997. Schneider National offers cost-effective, profitable transportation and logistics services throughout North America.

The company's 17,000 experienced associates, and I emphasize the word "associates," and drivers are in contact with dispatch and customer service departments by the most sophisticated satellite information and communications systems available.

The trucking industry, as you probably know, has become highly competitive. And Schneider National has been in the forefront of technological innovation: pursuing technology to improve efficiency and raise productivity; setting industry standards, if you will; getting the competitive edge.

I have been to Green Bay, Wisconsin, and observed firsthand his operating center, the matching of freight movements with available equipment, the control of this equipment throughout North America, the management of human resources, and the total commitment to quality service.

I know his company and admire his vision and business practices. The trucking industry has evolved into the critical link in global supply chain management. It has trucked moving freight over the highways and over intermodal connectors. It provides this critical link to all of the other modes of transportation.

Few people understand this better than Don Schneider. He learned to drive a truck when he was still in high school and continued driving while attending college and during his semester breaks while earning an MBA from the Wharton School of Business. He knows the transportation business from personal hands-on experience.

And he shares this expertise by serving as a Director on the Federal Reserve Board, as Chairman of the Business Advisory Committee for Northeastern University's Transportation Center, and in various positions of the Truckload Carriers Association and American Trucking Association.

And in his free time, he's a member of the Board and Executive Committee of the Green Bay Packers and a sponsor of the 1998 NASCAR BGM racing car. Through all of that, he still finds time for his family: his wife, Pat, and two daughters.

I know this has been a little long, but I thought it was essential that we understand a little bit about Don and his company. So please join me in welcoming Don Schneider.

The Trucking Industry Performance in the Global Marketplace

MR. SCHNEIDER: The opportunity to share some thoughts with you about how, when you deal with some of the issues you deal with, we can continue to have increased productivity in the logistics field is exciting to me and is a personal goal. Everything that you and I use or buy has a logistics cost embedded in it, and it affects the standard of living of all citizens of the world. The way that we can improve that standard of living is to continue to get more productive in logistics and take those costs out. We do that in a large number of ways.

What I'm going to do today is give you a little background on Schneider and who we are and some basics about the company. And then I want to use just a simple chart that shows a little bit about the distribution of time-sensitive large shipments, not talking about the UPS and that kind of thing but what would be either multiple-stop or truckload, then get into what kind of progress the United States has made in logistics effectiveness, and cover some of what I consider basic causes for that. Hopefully then we can get into a question and answer period after that if we have time. Those basic causes I think cover the gamut but really are very, very important in where we are in logistics.

I am going to be concentrating on logistics effectiveness in the United States, but as far as I'm concerned and have said, and not arrogantly, we have the best logistics performance in the world today. And our international customers continually tell me that and are very interested in what we can do in a number of the international markets that they serve. So, with that, at the end, we can talk about anything that you people would like to get into.

First of all, as far as background on the company, you'll notice we are asset-based, which means we invest in own equipment, 13,000 tractors and 40,000 trailers. We are an asset-based logistics company. We do not say we're in the trucking business. And the difference is very significant. We earn our customers' business by moving that load in whatever means will give them the best value on time. And that means, for instance, we use extensively truck-rail in this country and internationally into Mexico and Canada, where this is the appropriate mode on that particular shipment and the customer gains from the use of that.

We use extensively other carriers, where we can use their empty miles more effectively and improve the effectiveness through our logistics group. And we have a large group in our customer service center of PhDs and engineers who do a lot of modeling for our customers to optimize in a very dynamic fashion, real time, what is the most efficient, best way to move this particular shipment this time of the day and given the time-of-delivery requirements.

The competitiveness and the complexity of logistics to achieve the level of efficiency this country has achieved is beyond the capacity any more of any human being to manually think through and make these decisions. And that is why customers increasingly are going to that kind of a process that in seconds will give them quantification and optimization of what should be done.

We have 20,000 associates at Schneider National. And to be clear about associate, by that we mean specifically that we are a team. The technology we have is by far the most advanced in the industry, but it is a tool. The reason we are successful and the best in the industry is because of the quality, energy, and enthusiasm of the thousands of associates we have. They make many, many hundreds of independent decisions that ultimately make things work, and they use those tools very effectively.

But never take away the concept that technology is the answer. It is the work environment and the creative way that the associates feel enriched from the way they self-actualize on a daily

basis in doing all of the things they do to make what is specifically needed on that shipment happen. That's why we are who we are, and that's why we talk about all of us as associates.

We had revenues last year of \$2.5 billion. This year we'll probably be in the neighborhood of about \$2.8 billion. That's basically about the rate of growth that we have been experiencing here over the last few years. As I said, we are known in the industry for the technology leader. We extensively invest. Approximately 2 percent of our gross revenues every year are in development in managing of those particular systems, which is a sizable investment in overhead.

We have a number of operating centers located throughout North America. I'm not going to go through these extensively. An operating center for our Orange equipment is like an Orange truck stop. Basically it's about 80 to 100 acres of land, close to a major interchange, where the drivers get fueling. They have driver services, showers, laundry facilities, an exercise workout room. Drivers sit an awful lot, and they need that exercise. And there's a cafeteria, where they get meals at cost, and also a very extensive maintenance facility. All of our vehicles are PMd based on mileage, and it can happen at any one of these locations.

We have a number of locations in Mexico, the largest in Mexico City. We also have a very extensive one in Toronto and also in Montreal City, up in the Quebec locations. Let me now talk about what is happening in our industry, the time-sensitive industry in the United States. And basically what this chart shows is today that industry is considered to be \$63 billion. And of that, van truckload is about \$30 billion, or about 48 percent, of that share.

Domestic, not international, but domestic, truck-rail is about \$6 billion, or 10 percent. The private fleet operations are about 42 percent. Projections made by Alex Brown and DRI and some of our own work in developing this, in the year 2006, we estimate that the shift will be primarily from private carriage, which is happening consistently because it is in many instances not as cost-effective and there's an awful lot of outsourcing of that kind of thing happening in the industry. There will be a continuing increase in domestic truck-rail. We expect that to happen. And that share will go up. Basically the rest of it will happen in the primary truckload carrier component of this particular market.

One of the things I think is important is the fact that we in the United States with the growth in our gross national product have to also be very sensitive about: Where are we going to get the transportation capacity to continue to be able to move and serve our customers the way they are used to being served on an ongoing basis today? And that's certainly something that we should not take for granted.

Let me now use two macroeconomic charts developed by Bob Delaney with Cass. And I think he's going to be talking to you later on. Bob publishes this and uses it.

It tells an awful lot about the efficiency with which the United States logistics effectiveness is taking place. The first one is a chart that shows what has happened to inventory investment in this country. This chart starts in 1983 and goes through 1997. The ratio of business investment to gross domestic product has fallen from about 24 percent to handle our customer needs in total in this country to today somewhere close to about 16 percent.

This is the best surrogate that I can possibly think of for the quality of freight in this country. Our customers are not going to eliminate backup stock in case a vehicle, truck-rail or truck or a railcar, doesn't arrive and risk shutting a plant down and having, for instance, one of Chrysler's auto plants, 2,000 people sit down and say: Well, we're going to have to wait until that load of tires gets there. They do not have any warehouse where they pull stuff out of in case something doesn't happen.

That puts a great challenge. And our customer service team has a standard of — and it's posted very, very vividly in that particular section — number of days since the last certified plant shutdown, of which we are responsible from a compensation perspective. But, even more importantly, it is a very dishonoring thing to have to deal with the fact that we couldn't perform well. And that even considers the weather situation that you're dealing with.

I can assure you this is continuing. Our customers are still on programs to take inventory out. And it will continue because there's an interest-carrying cost on every dollar invested in inventory.

And ultimately, in a competitive marketplace, that's in the price that they have to compete with. And if one of the manufacturers or customers does a much better job and they have a cost advantage in the marketplace, they are going to take it to get market share. And that's really what's driving this whole process.

There is a secondary, equally important inventory in the whole process of warehousing and all the rest of it. It has hidden costs, like obsolescence, damage, and a whole series of other things that if you can pick it up, deliver it directly, get it to the line where it's being used, and get it into a product, it just doesn't happen and even the product itself at the end if it doesn't have to be warehoused. And so most of our major customers are working on that product cycle from raw material manufacturing on through to, ultimately, delivery.

In fact, an interesting side note on this just to illustrate this, down the road I would not be a bit surprised that most of us will be ordering new cars either on the Internet or in a dealer's showroom where either they have a model or a video that shows the various components. And they will electronically send that to the factory. What's coming down the line will be altered and that particular product made to your specifications will be delivered specifically. And you have just tremendously shortened that whole product cycle time.

Most of you I know see the same thing I do. You drive by a dealer, and you see this huge inventory sitting there. And you can visualize. Ultimately when you buy a car there, you're paying that capital cost of that particular inventory.

Another macroeconomic chart: logistics cost as a percentage of gross domestic product. This includes interest on the inventory: 1989, about 12 ¾ percent, close to 13 percent, down today, 1997, to close to 10 percent as a percentage.

Now, when you consider the size of this industry, you're talking about a fairly large component in the United States. And you look at the effectiveness with which this industry has moved. Is it any wonder that we have inflation at less than 1 percent or about 1 percent right now? And the Federal Reserve is very conscious of this kind of thing. This certainly is not the only effective industry. A lot of those industries recognize the fact that in our economy, if you raise your price, you've lost the business. And Deming came over and told us how to deal with constant improvement very, very well. And ultimately the solution is to take the cost out. But who benefits? This economy and the standard of living keep rising from that particular mind-set.

But this is a real tribute to the many, many hundreds of people, including many of you here in this room and many of our officials who have been fostering a number of changes that have had an impact on this particular factor because, as you'll see later on, I'm going to be talking about that being an important component.

What I did also to reinforce that last slide, this chart shows what our average price is over the years 1980 to 1997. And the top part, the red blocks, are the consumer price index, which ends up at about 150 today. Our average price today is down in the neighborhood of about 80 cents.

Reading this in another way, if we were charging a dollar in 1980, today we are charging 80 cents. And if you were to take that even further, the vehicles we are running today, changes in

capacity have increased the size of the loads. And our charges are by the mile or by the truckload. So this is probably down in the neighborhood of 70 cents. This happened in a very competitive environment but as a result of a very creative group of people. This happened also in an environment where our driver wages, probably in the neighborhood of \$50,000 to \$60,000 a year today, have virtually doubled. But in hundreds of ways, they have continued to take costs out.

And, again, what this does is just reinforce this last slide, which is the economy in total. Here we are and a lot of other companies out there very similar to that kind of performance.

Now, let's address, then, what really I'm sure is of interest to you people. What are the causes? What are the things that you can put in place that will bring this about in the particular areas that you're interested in?

The first one is a recognition that the product supply chain and the management of it and government regulation are like oil and water. What has happened with deregulation is that for the first time, we do not market to a group of administrative law judges in Washington, D.C. We have to market to our customers. And the rapid change of a competitor doing something and forcing us to change and be very, very astute in that — and I might caution you in a morally right manner — we run legal. Our drivers don't violate. Those are unacceptable terms to deal with somebody's life in a bad way.

This is probably a major, and I can't put a percentage on it, impact on logistics. Prior to this, working with our customers was like a transaction-type activity. Today we work very, very closely with many of our major customers. In fact, this slide here really kind of portrays very well that whole process of the interaction. I use gears in order to exemplify the fact that they're all interrelated and one drives the other.

The various components, every one of those needs to be coordinated. As we work with customers, customers decide ultimately what their prices are by their costs. They decide the service levels they can get by what they do. And only by us working with them and showing them: Can we help them to improve and, as a result, improve this product supply chain?

Inventory. Inventory does two things that are detrimental to an economy. One, it is capital. In most developing countries, capital is a very important productivity issue. If we can take capital out of inventory, where it's wasted, and put it in other components, where it has more value, you will see an increase in that economy's standard of living.

The same thing is true as we continue to deal with the inventory issue around standards of measurement of performance. All of our customers measure our on-time today. And that is the first qualifier in doing business. If you can't run at an acceptable level, you don't get the business. It doesn't matter what your cost is. That's a requirement.

Equipment-carrying capacity, the size of the vehicle. Over this period from '82, when a major change was made, to the present, we have gone through the following changes. The average trailer length in '82 was 45 feet. Today it's 53. The height has changed, so has the width.

The cube dimension is 28 percent more. In a continually more sophisticated economy, cube is as important as weight because of the kinds of commodities that a very, very sophisticated economy uses, including things like computers and a lot of the things that are very important in our particular economy.

I also want to show you, though, that at the same time this was happening, safety was improving. Let me say that again. The vehicles got larger, but the number of fatalities has dramatically dropped during this period of time. There probably are a lot of reasons, including improved highways, but something needs to be considered when you think about productivity, and

that is when companies are more productive, the training dollars go up. The technology that you use for braking and a whole series of other things improves.

As a result, there is a correlation between driver productivity, how much he's carrying, and what kind of investment you can make in the related technologies in order to help him to be more safe. But too often people say: Well, if you get huge vehicles, your safety record is going to go down. And it's just there is not a trade-off here at all.

Another, mode optimization. The fact of the matter is that the reason this country has such an effective logistics system that benefits our standard of living is because we have a complementary system dictated and demanded by the marketplace in interacting properly.

The railroads where they have a lot of freight moving on a lane between two points, typically like, say, Chicago to Los Angeles, are lower cost than any truck movement. And they can run on time. Lately they haven't, but they'll get back to it. Assuming that the outer route is not too great, that load should go on the train, not by government edict, but the marketplace will want to do that. There is a \$500 difference in charges on every load right now that we charge our customers when we can still deliver it on time but use truck rail. This is happening through the system. That 2,000-mile length of haul is probably ideal or even longer. But there are substantially shorter lengths of haul that when the conditions are right, you can use truck-rail. If the railroads run well, the marketplace will very quickly get every efficiently moved load on that train. If you don't do it, you lose the customer. It's as simple as that.

Global logistics. Let me start first with North America. The border crossings, Canada, in particular, have improved dramatically. Mexico has a ways to go yet, but eventually if it can happen in Canada, it will happen. That is certainly an important consideration. I would ask that we do more harmonization of vehicle size and weight and regulations between contingent, in other words, related, highway countries in any part of the globe. But the particular one I'm talking about right now is the United States, Mexico, and Canada, where there are still variations.

Most of our major customers are global in nature. What is happening in the United States in logistics efficiency is spreading to the rest of the world because they have had a taste of what can happen. For instance, we presently are operating in Europe. We have been contracted by J. A. Case, the farm machinery people, to handle all their logistics throughout the world and to develop an inventory effectiveness and cost-effectiveness system for that. I am sure that South America eventually is going to come into play that way. And the same thing is true with Asia and a lot of other countries. To the extent that we can coordinate and standardize in many of the areas, there are tremendous productivity opportunities for us to share with all the people that use those particular goods.

One caution: Be careful about standardization that puts into law something that is very difficult to change when you find technology or some other thing can replace it. Too often laws have been passed and they're so rigid that they stay where they are without really accommodating the continuing evolution.

Right now, for instance, as we deal with technology, all of our vehicles have computers in them. We're the first large carrier to use satellite to communicate digitally with all of those. And our drivers get all the information and can call up on the screen out of our mainframe directions and anything they need specifically, regardless of where they are.

Also, throughout North America, wherever that load moves, every two hours it is pulled compared to where it needs to be to deliver on time. And that's why our on-time efficiency is at 99 percent. It is not a policeman or a monitor. Our drivers want to deliver on time. And it would be only

some unusual circumstances where we would have to take some actions in order to do something to make sure that that delivery happens.

We presently are working on another technology. We actually have some in operation on an experimental basis in which we have, as I told you before, about three times the number of trailers that we have power units. What we need is an untethered monitoring device because as those trailers are parked at various locations or on truck rail, we want to know where that trailer is also.

So we're experimenting with a device that is embedded in the front of the trailer that will do a very similar — it's a transponder that indicates that number and quickly will be geographically located on our associate screens back in our control center that will tell them exactly what it is. It does even more than location, though. There is a laser beam that will tell us what percentage of the trailer is loaded. And it will also tell us if the doors have been opened or not from a security perspective. So we get a lot of added advantages in that way.

Let me jump back again and caution you. Many of you are very influential in what you do. Don't set standards that wouldn't allow those kinds of things to continue to take place naturally in an economy. What you want are voluntary coordinating activities that allow for the evolution not just in technology but in a whole series of things.

You saw the safety chart I put up here. If we had said years ago big vehicles are unsafe and we're going to pass a law never to allow that to happen again, we wouldn't have the kind of productivity that we have today. So it's just a caution. And you people have a big impact on your countries in that particular area.

Those to me are what I consider to be, as I thought it through and was thinking about talking to you, the major areas that you need to consider as you think about logistics effectiveness and productivity throughout the world.

I know, for instance, that based on my experience, what we do in this country is going to gravitate to the other parts of the world. You have to respect the cultural differences, the geographic differences, and the investments in infrastructure and various other differences that various countries have, especially the developing countries. But it's going to happen. The consumers and their standard of living dictate that we continue to make progress in this very important area.

So, with that, I'm not sure how much time we've got.

MR. WYKLE: We'll take a couple of questions.

PARTICIPANT: Could you talk about your training programs of your associates, how you train them?

MR. SCHNEIDER: Yes

The largest group of associates we have are drivers. And we have what is by far the best training in the world for that particular driver. It's a three-month program before he or she goes on the road. And it involves professional drivers who spend time in the tractor with them in addition to an awful lot of classroom work.

We also have a very unique process. We have what we call a skid pad, which is flooded in the summer and iced in the winter. And we have vehicles that are set up so we can lock the brakes and force a vehicle into a skid in a very safe area.

The basic premise is simply this. You can tell somebody you can't control a vehicle when it's out of control in ice or snow or rain. The best way to teach them is with their tummies.

MR. SCHNEIDER: When they on this skid pattern — I've been on it — all of a sudden find the trailer passing them, oops.

And it teaches people to slow down whenever they start getting into those kinds of conditions. We've got to really compliment them. We hire an awful lot of people who have had 20 years of service experience in the military and they're looking for their second job.

One of the people that went through the training program here about a month ago wrote me a letter and said: I spent 20 years in the service, and I trained an awful lot. This is by far the best training in the shortest period of time I've ever had in my life.

We are committed to spending — it costs us \$6,000 to train every driver that we put on the road. It is morally an obligation that we have to do everything that we can possibly do to never see that anybody is hurt.

By the way, talking about that, most of you probably have seen our vehicles. They're orange. I get letters from motorists all over the country talking about drivers of orange trucks. And that color has a safety impact. It is by far the color that attracts the most attention.

We used to be blue and white. And it was probably pretty, but it sure didn't get the kind of attention that orange does. It has a big impact.

[QUESTION INAUDIBLE]

MR. SCHNEIDER: The question was, I cited in a global way different countries and some of the cultural differences. Could I give an example of something?

When we sent associates to Europe to begin to manage the case operations over there, one of the things we recognized was the fact that there is still some feeling of not total cooperation between, for instance, the French and the Germans and some of the other nationalities over there.

And given the backgrounds, I don't think about people that way, but I can understand that. And the same thing is true where the practice is that people have in countries.

You're not going to change overnight things that are basic practices around when people work and a number of other things unless you gradually go in at that.

We're very careful in going into a foreign country in dealing with respecting what they do and trying to take that and improve on it and work it through.

The same thing happened in Mexico, where we have an extensive operation today. We had to recognize the fact that the business climate and the ethics in Mexico were not what they were in the United States.

We will not pay off anybody or deal with anybody in any way that is unethical. It is a travesty of justice to the population of a country when those kinds of business practices are tolerated. And, yet, I understand that if something is traditional over a long period of time, it's bound to be there, but only by people taking stances against it.

Getting bloodied — and we get bloodied when we do that — do you eventually bring it around to the fact that the marketplace and the best value are what should decide how things happen.

Those are a couple of examples of what was meant by that.

PARTICIPANT: My question deals with the Y2K problem. Usually the question is asked: What is the impact? What do you think it will be? What's your perception, at least in terms of global transportation and Y2K in terms of its tentative impact in the overall frame?

MR. SCHNEIDER: The question is: What do I see as the global impact of Y2K on global logistics?

Well, let me start with Schneider. First of all, we were not aware until about a year ago that every one of those computers with the satellite in our tractors had a chip in it that wouldn't function after that particular date. So we are in the process of changing all of those over.

We have run a lot of experiments, as all of our customers have. The fact of the matter is that we know that most major companies are doing what we're doing. And we're good at it. We really have taken it — it's very costly — but we've taken it seriously.

The Federal Reserve Board is very concerned about what happens when even a group of very mostly small companies, for instance, that haven't really sensed where the problem is all of a sudden don't function well or what happens when people start saying, "Gosh, if my bank doesn't allow me to get my funds out, maybe I'd better get my funds out and put them in my mattress or something ahead of time" and we could have a very disruptive process. Hopefully with enough of the checking and experiments, we will eliminate it then.

We're Chrysler's largest carrier. We do a lot of business with Ford and General Motors and so on, with all of them, but Chrysler had an interesting one as they were running an experiment.

They ran a possibility of that year. And what they found at a given plant was not internal but that their security system wouldn't let anybody in the plant. And so they're all standing out there at the gate waiting to go to work. But, I mean, it's just those kinds of things that could possibly be disruptive that you just don't even think about.

PARTICIPANT: You had mentioned truck size and weight as an area where you would like to see greater compatibility. Are there other regulatory areas where you would like to see greater harmonization and compatibility of regulations in North America?

MR. SCHNEIDER: Yes. A lot of that — I could name some of them. One is the whole issue of the border crossings in Customs. I mean, the ability to standardize that, make Canada, the United States, and Mexico, for instance, the same so that our customers know exactly how to deal with what the practices in that area are is very, very helpful.

I think also there are still some unneeded practices in various states, like, for instance, we are required as a carrier to file insurance with the DOT but also with various states. And we get a number. And it just doesn't make any sense to continue to do that kind of thing any more.

And then two positives in this area. The fuel cost, the fuel tax issue is now a coordinated effort. And so is IRP and the licenses and the way they have been handled. That's very, very positive and a big improvement in effectiveness, both for the states but also for us from the standpoint of the way we go at that. But those are the two things that come to mind as far I'm concerned.

MR. WYKLE: Okay, Don. Thanks very much. We certainly appreciate your time.

MODERATOR SCHACKNIES: I know these conferences are networking opportunities, friends that you haven't seen for years and you want to exchange more views with. We're very sympathetic with that. We do have a reception later on in the evening. And that will afford another opportunity, plus tomorrow's sessions.

So, without further ado, let me introduce my boss: Dr. Walter Sutton, who is the Associate Administrator for Policy as well as for the Office of International Programs.

Regional Characteristics of Freight Logistics — Government Cooperation and Coordination

SESSION MODERATOR SUTTON: I certainly appreciate and recognize all of the hard work that has gone into putting this conference together. And we certainly appreciate all of the attendees. I know that we have a challenge right after lunch to keep everybody awake and invigorated, but we think we're up to that. We have an outstanding panel we're about to present. I have a few opening remarks. And then we'll get right into the panel presentations.

The FHWA Office of Policy, for which I am responsible, covers both domestic and international policy issues. It includes the Office of Policy Development, the Office of Highway Information Management, and the Office of International Programs.

Several representatives of these offices are involved in this Trilog plenary symposium as organizers, moderators, and speakers. And I am pleased that we can collectively make a contribution to this important effort.

The domestic freight policy focus of our office includes studies on the condition and performance of the highway system, highway cost allocation, freight statistics, truck size and weight, intermodal connectors, and others.

Through our national freight partnership with public and private stakeholders, we have reached out to local, state, and regional interest groups throughout the United States.

During many of our industry outreach sessions, we have been urged to expand our policy concerns to the global marketplace. Our international freight policy focus is evolving in the context of the transport implications of regional trade agreements and alliances, most notably NAFTA and its Land Transport Standards Committee and other formal working groups addressing issues with our Canadian and Mexican colleagues.

We're also becoming increasingly involved in the transportation working groups and task forces of APEC, the Free Trade Agreement of the Americas, and the Transatlantic Economic Partnership between the United States and the European Union.

We will hear today from representatives from Canada and Mexico addressing NAFTA-related issues as well as from representatives involved in coordinating the deliberation of policy issues affecting the APEC and the Transatlantic Economic Partnership.

The purpose of this session is to highlight and differentiate the wide range of public policy issues that have emerged from the discussions with our respective regional forums.

We have already listed some of the policy issues for you that have surfaced in the papers presented at previous OECD Trilog plenaries held in Mexico City, Toronto, Tokyo, and Brussels. We would like to hear additional thoughts on improving the efficiency of supply chain logistics through multilateral and/or unilateral government action.

At this point we're interested in gaining a broader perspective on the wide range of concerns affecting the performance of shippers and carriers operating in various regions of the world. We trust that with the synthesis and prioritization of policy issues, we'll help the OECD task force members prepare the final report and issue consensus recommendations for an institutional reform agenda.

As Associate Administrator for Policy, I am keenly aware of the necessity of balancing competing interests, not only within the various U.S. economic sectors and communities but also between the United States and the various regional trading partnerships.

I am looking forward to the presentations and request that our speakers try to limit their speaking time to 15 minutes. We hope to have Q&A at the end of their presentations so that we could get some input from the audience as well. If we do not have sufficient time to get all of your comments in, we would ask that you submit those to us in writing or call us. And we will attempt to make your suggestions part of the next phase of this program.

With those brief remarks, I'd like to get right into the presentations. Our first presenter is Kristine Burr, who is the Director General of the Surface Transportation Policy Directorate at Transport Canada. She was previously head of the delegation of Canada or currently is the head of the delegation for Canada for the NAFTA Land Transportation Standards Subcommittee. And she has had a long and distinguished service in the public sector there in Canada for approximately 20 years.

NAFTA Land Transport Standards Committee — Report on the Binational Studies Program

MS. BURR: I'd like to thank the Federal Highway Administration for inviting me to speak at this symposium. As the program notes, I've been asked to speak to you about NAFTA harmonization initiatives. And as the Canadian head of the delegation to NAFTA's Land Transport Standards Committee, commonly known as LTSS, I'm truly honored to do so.

Let me start by saying a few words about the context for my remarks. Each year \$100 billion worth of goods moves in intraprovincial trade in Canada. And over \$1 billion in merchandise is traded across the Canada-U.S. border daily.

The framework to enhance this level of trade activity has been provided through national and international agreements, namely the Canadian Agreement on Internal Trade, the Canada-U.S. Free Trade Agreement, and more recently the North American Free Trade Agreement.

In considering government's role in enhancing transportation efficiency in support of international trade, it occurred to me that dealing with NAFTA's standards harmonization, important as it is, would only address part of the issue.

When I look at the day-to-day workings of my department on the surface transportation side of things, it is clear that harmonization of technical standards can mean different things in different situations. We must also recognize that technical harmonization may not be a complete panacea for addressing problems related to the efficient movement of goods.

I would, therefore, propose very quickly to look at harmonization in a broad context and point to a range of approaches or instruments that can break down barriers to the safe and efficient movement of goods across borders. These include the technical harmonization I've touched on, mutual recognition agreements, applications of technology, and broader facilitation initiatives.

I will restrict my remarks mainly to motor carrier transportation, which accounts for approximately 70 percent of goods movement by value across the Canada-U.S. border and about half of the Canada-Mexico trade.

First let me set the issue in a Canadian context. Trade is of such importance to Canada that we cannot afford to allow the operating rules for our transportation sector to create inefficiencies which add to the cost of goods.

Of equal importance to the transportation sector is the need to ensure that our rules are not detrimental to the competitiveness of our carriers in the international market. Both the economy as a whole and the transportation sector, in particular, need consistent national rules that are compatible with North American practice. This synergy between national and international harmonization is particularly significant for the trucking industry in Canada.

Fortunately, both levels of government, federal and provincial, agree on the importance of creating a consistent national regulatory environment. Provinces recognize that a regulatory regime which disadvantages their carriers in the interprovincial and international markets will have detrimental effects on their transportation industry and possibly on their trade as well.

In 1994, Canada and the provinces took the unusual step of negotiating an internal free trade agreement, which, among other things, set the rules for harmonizing national trucking regulation. This reinforced the commitment to harmony in this sector. This commitment extends to agreement on basic operational standards for carriers. The provinces implement these in detail. And the federal government will shortly exercise its jurisdiction over interprovincial and international carriers to

legislate an overall national framework, which will ensure that the provinces apply these operational standards consistently to both interprovincial and international carriers, those in federal jurisdictions.

This, then, is the national context for harmonization of carrier operational standards. When I come to NAFTA harmonization, please keep in mind that this has proceeded in parallel with a national process, and that in developing national harmonization goals, the federal government and the provinces have also been keenly aware of the international dimension.

Generally speaking, movement to harmonize transport processes is a byproduct of increased trade activity, rather than an objective, which one usually finds being pursued as an end in itself.

After a number of years' involvement in NAFTA issues, I would note that harmonization is something that is usually not undertaken lightly. Harmonization usually means a change, in some cases radical change. And the process itself may occasionally be frustrating, both in dealings between countries and in dealings with the reactions of interest groups within a country. Nonetheless, it brings with it significant benefits. As transportation professionals, our challenge is to demonstrate to decision-makers in both public and private sectors that there is a net benefit from harmonization.

Perhaps the major push for harmonization today comes not from the question What will I gain? But, rather, it comes from the question What will I lose by not becoming part of a larger regional economic unit in a world where integration is becoming increasingly commonplace?

The degree to which harmonization can be achieved depends on the degree to which the countries involved hold a common vision. But it is not necessary that harmonization produce uniformity.

Significant benefits can result from resolution of a few key issues. Inherent in ensuring the compatibility of standards is the need to determine which standards or procedures require complete uniformity, in other words, need to be identical, which merely need to be considered equivalent, and which require only mutual recognition and reciprocal agreement.

For example, it is generally recognized that most vehicle operating standards should be uniform while driver licensing standards need only be equivalent. Individuals who negotiated the North American Free Trade Agreement understood that you can't contemplate the creation of the world's largest trading block without at the same time addressing transportation issues that might impede the efficient flow of goods across borders.

While Canada and the United States have long enjoyed relative harmony in the technical standards we apply to our motor carriers, permitting a huge and ever-expanding cross-border flow of motor carrier traffic, neither nation had established a similar relationship with Mexico. The architects of the agreement rightly realized that the creation of a truly integrated North American surface freight market would require a set of technical standards for carriers that were compatible enough — and by this I don't mean identical — to allow carriers to move safely and efficiently from one country to another.

Specific areas requiring technical compatibility were set out in the agreement and deadlines assigned for the completion of trilateral negotiations. However, the framers of the agreement may have underestimated the complexities and range of issues that would emerge. I know you are all aware that a delay has occurred in opening the U.S-Mexico border to motor carrier traffic. And I won't dwell on this point. However, I am pleased to report that, despite this delay, discussions at the technical level have paid off in some important agreements and milestones. And we expect further successes in the years to come.

Highlights include the following: agreement on a common understanding of the age, language, and medical requirements for truck drivers engaged in international service. The work is

ongoing toward reciprocity of overall safety fitness regimes. Consensus on the direction to be pursued to address regulatory barriers and discrepancies which currently affect international trucking

operations. A resolution was endorsed which establishes a context and framework for ongoing discussions on regulatory compatibility.

Completion of a comprehensive assessment of North American rail safety standards determined that they are sufficiently compatible so as not to present any significant barriers to trade. The group continues to meet to address safety and operational issues which could impede cross-border traffic.

A similar review of regulations governing traffic control devices determined that outright harmonization was neither feasible nor necessary. A trilingual guide to North American traffic control devices was published by Canada for the use of our motor carriers. And the United States and Mexico intend to do the same. A trilingual North American emergency response guidebook has been published to ensure authorities engaged in responding to accidents involving hazardous materials will have consistent information.

Finally, the NAFTA Transportation Consultative Group, which was established by the three countries to address areas not specifically enumerated in the NAFTA, is also engaged in trilateral discussions aimed at eliminating barriers to the movement of goods across our shared borders. For example, truck and bus carriers have benefited from the publication of motor carrier operating requirement manuals by all three countries. TCG has also been active in addressing issues such as motor carrier insurance requirements, driver and carrier data exchange, and a five-year plan to undertake cooperative projects in science and technology.

While the items I have described are not likely to generate much excitement from the general public, such advances are fundamental in order to improve the movement of goods across borders. Moving goods across borders does not, as I pointed out earlier, necessarily require identical technical standards for the carriers of these goods. Another way for the public sector to contribute to transportation efficiency is through the negotiation of mutual recognition agreements whereby standards adopted and enforced in one country are accepted as equivalent to those of a foreign jurisdiction. Such agreements require a level of trust among trading partners, especially in areas where public safety is at stake.

The most obvious example of mutual recognition agreements is in the area of commercial driver licenses. Canada and the United States have long allowed each other's drivers to operate as if they were domestic drivers. And I am pleased to report that shortly after the implementation of NAFTA, Canada and Mexico came to a similar agreement.

A Canada-U.S. agreement on medical reciprocity for commercial drivers, whereby we accept each other's medical requirements as condition for obtaining and holding a license, is imminent after several years of discussion. Essentially the point I'm trying to stress is that commercial traffic doesn't flow unless governments allow it to happen. A mutual recognition agreement can be a very effective way to address some of the differences between national practice that must be overcome if we are to allow trade to flow unhindered.

Governments across North America are also looking to advance technology and intelligent transportation systems, or ITS, to help improve transportation and trade flows. A trinational group, the International Border Clearance Planning and Deployment Committee, is attempting to streamline processes and coordinate the incorporation of technology for transportation and Customs purposes at North American border crossings. This committee provides recommendations to

governments at all levels in Canada, the United States, and Mexico regarding use of new technologies and processes.

It is anticipated and, as Mr. Schneider alluded to at lunch, it's anticipated by the industry as well that the use of common documentation and advanced technology will add value to the Customs process and create opportunities for further harmonization. When implemented, such new processes will go a long way toward making our borders truly seamless. New technology will facilitate automatic toll collection, pre-clearance at Customs and immigration, and vehicle and driver inspection.

To complement this effort, in Canada, the federal government will be encouraging provincial governments and the trucking industry to explore the possibilities of using technology to automate motor carrier safety and compliance activities. This technology has the potential to monitor a vehicle's weight, dimensions, and credentials and to ensure the vehicle is safe to operate. As well, the drivers' condition and operating records eventually can also be checked.

This technology is already operational in Ontario, our largest province, and in a number of states in the United States. Our interest lies in ensuring interoperability amongst technologies developed and distributed by the private sector so that similar technologies can be used in communicating with one another throughout North America. Eventually these types of technology applications will be able to accommodate various government compliance functions to maximize efficiency and minimize costs.

The areas I have talked about so far all deal in some way with harmonization or compatibility of standards. However, there are other issues that government officials interested in surface transportation efficiency must deal with that have nothing to do with standards but are every bit as important in allowing traffic to flow between jurisdictions. I call these facilitation issues.

Let me cite a couple of examples. Though domestic agreements have existed for the equitable sharing of commercial vehicle fuel taxes, no such international agreement existed until the United States passed the Intermodal Surface Transportation Efficiency Act, or ISTEA, in 1991.

ISTEA mandated that by 1995, U.S. states would participate in something called the International Fuel Tax Agreement, or IFTA, whereby fuel taxes paid by commercial motor carriers are prorated based on mileage traveled in each state jurisdiction. Subsequently, all Canadian provinces have joined as well. And it is possible that Mexico will also one day be a part of IFTA. This agreement results in significant administrative simplification for the motor carrier industry, as Mr. Schneider told us over lunch.

A similar type of agreement, the International Registration Plan, or IRP, operates for the proration of carrier registration fees. Again, all U.S. states are members. And while only three Canadian provinces have joined so far, there are strong indications the remaining provinces will come on board in the not too distant future.

Canadian participation in IRP is supported by the trucking industry for the same reason it supports IFTA because it results in a significant reduction in administrative burden. Again, it is possible that Mexico will also join as a means to facilitate international motor carrier traffic with Canada and the United States.

Again, resolving facilitation issues is not the stuff for headlines. However, failure to resolve them is to the detriment not only of the motor carrier industry but to everyone who ships and purchases goods. So, in conclusion, let me pose the question: What does the future hold for trade in transportation? In the near term, I believe we can expect continuation of the high degree of cooperation among North American governments to achieve the harmonization goals set out in

international trade agreements. Although we may pursue different strategies in implementing harmonization measures, we are clearly moving toward a more cohesive continental transportation system than we have had in the past.

I can also foresee joint efforts within Canada and among Canada, the United States, and Mexico to use technology to improve the efficiency of our shared transportation system.

We can take our cue from Europe, where, as we have heard this morning, countries are shedding barriers and overcoming hurdles to create the unified trading block with an integrated transportation system.

Similarly, we must streamline our processes, demand interoperability of our technology providers, and promote sustainable transportation and safety at every opportunity.

Thank you very much.

SESSION MODERATOR SUTTON: Thank you, Kristine.

Our next speaker is Oscar de Buen. He has been active at the Mexican Ministry of Communications and Transport in various capacities for 15 years and is currently head of the Toll Roads Unit, whose major projects include planning and restructuring Mexico's road system.

Mr. de Buen has been a professor at the Engineering School of the University of Mexico and was co-Chair of the 1997 OECD conference on transport, networks, and logistics held in Mexico City.

Infrastructure Development in Central America

MR. de BUEN RICHKARDAY: Let me first acknowledge and thank the Federal Highway Administration for the invitation to participate in this symposium.

I would address the topic of this symposium, which is public policy issues in order to develop logistics freight systems. I will use the case of Mexico to try to propose to you some of the key questions that are currently important to develop such a policy.

I will start with a discussion of the role of government in this field. I will draw on the conclusions of the OECD seminar that took place in Mexico City last year. Then I will use the case of Mexico to illustrate some of the transformations and changes that have occurred in the system that have to be taken into account in order for public policy to be developed in the future. And I will conclude with some ideas for that purpose.

If we take freight logistics as a key element for us, some field of work that is increasingly recognized as being a key element of international trading systems, as an area of opportunity for increasing the national industrial and firm competitiveness in the different countries and also as a field of work where multiple trade-offs occur between different areas of position, and we agree that this is a field where the primary concern should be focused on the private sector, then I think that a very relevant question is: What should be the role in this area for the government to play?

If we take a look at the conclusions of the OECD Conference on International Transport Networks and Logistics that took place in Mexico City last year, some preliminary ideas on what this government role in developing freight logistics were to be, some conclusions and some proposals focused on the following fields.

There was an agreement that the government role should focus on planning the development of the network, on facilitating the way in which this transport network was to be evolving and was to be coordinated among different modes of transport. A key role of the government was also recognized in the field of building and maintaining infrastructure; also, innovating and developing solutions in accordance with industry and with other areas of government that could facilitate the movement of freight, standardize transport practices and technologies, as we just recently heard in the NAFTA context; also, focusing on deregulation, pricing as a way to provide incentives for the different actors to behave in a way that is consistent with developing freight logistics.

Subsidies. Use them only where you have some very specific objectives that you want to pursue. And, finally, allow for the dissemination of information among the different interested parties. These conclusions, as I say, were taken from the conference last year. And what I want to do now is to see how they can be applied to a country such as Mexico.

Let me first tell you that in Mexico, the transport system has been thoroughly changed during the last decade. If you look at the transport system back in 1985, the government did practically everything. It constructed. It operated. It was the owner of the facilities. It was the owner of the transportation companies except for trucking. It regulated. It had very — well, it was present in all aspects of the transportation system.

From that point to now, a lot of changes have occurred that have changed radically this picture. I give you a list of some of the most important actions that have been undertaken during the last — let's say starting in 1986-87 and have been undertaken during the decade of the '90s that have in general or as a group transformed the characteristics of the Mexican transportation system in a substantial way.

Some of the most important actions are: trucking deregulation in 1989; an opening of multimodal transportation to multimodal transportation operators in 1989; developing a toll road network with private investment between 1989 and 1994; the signature of NAFTA and its related transportation agreements in 1994; a port privatization process that took place between 1993 and '96; also an airline privatization and sectoral restructuring process between 1991 and 1996; railway privatization, which is currently still under way and which started in 1996; airport privatization, which started a couple of months ago and is in the process of being completed before the year 2000; a very substantial telecommunications development and specifically the dismantling of the Telmex, the Mexican telephone company monopoly, in 1992; and the creation and continuous operation of the Mexican Transport Institute as an independent research organization dealing with transportation issues in the country.

All of these, as you can see, are far-reaching institutional and regulatory changes that have transformed the transport system. In addition to that, we have made a number of legal changes to the framework of the transportation system in the country. Some of the most important of them are: the Highway, Bridges, and Federal Trucking Act of 1993; the Ports Act of 1993; Railway Services Act of 1995; Airports Act of 1995, and related law; and the Procurement and Public Works Act of 1994, which also bears very importantly upon the way in which transportation facilities are developed in the country.

What are the consequences of these far-reaching changes for the Mexican transportation system? Well, the first is that we have seen reduced government participation in basically all of the fields of the transportation sector.

The government is no longer the only owner of transportation facilities and vehicles. It is no longer a provider of transportation services, either directly or through parastatal or public agencies. And it is having a smaller role in the management of infrastructure systems.

In contrast, there is a broad and substantial private participation in basically all of the fields of the transportation system and specifically in the provision of services, infrastructure operations, financing, and management.

This has also been a response to the need to better communicate with the rest of the world. And, in particular, since the signing of NAFTA and since the signing of other regional trade agreements with Chile, with countries in North and South America and some of what is being currently done with Europe, they have called for actions that better link the country with the rest of the world.

If this is the case and if we can conclude that the Mexican transportation system currently has been changed in a substantial way with respect to tradition and with respect to what it used to be before this change process took place, then what in this context is suitable for the government to do in order to promote freight logistics and in order to develop a role in allowing this very important activity to take place in an efficient way?

Well, first, in a very general way, let us identify that the five main areas in which the government should take a role are: first, the elimination of bottlenecks and red tape; — even though there is a lot of progress that has been made in the field, there is still a lot of work to be done in the future; in particular, with respect to practices that obstruct the adequate functioning of the logistics system; second, to invest in infrastructure projects, both to develop them as well as to ensure the proper maintenance and attention to these infrastructure projects; third, promote and supervise that competition takes place in an efficient and legal, transparent way; fourth, facilitate technological change among the different actors that are participating in the new transport sector in Mexico; and

fifth, take a role in which the private sector is induced and encouraged to promote and negotiate its own solutions; in other words, let the private sector do what it does best and keep the government role in areas where it really has to be involved.

Some specific actions that the government has been taking to develop these kinds of systems or these kinds of actions are the following. As you have just heard, the Mexican government has participated with the NAFTA partners in harmonizing land transport standards within North America.

We have undertaken together with the United States a broad study of border crossings and border transportation issues along the common border between the United States and Mexico. And, as a part of that participation by Mexico in implementation of the SENTRI and NATAP systems to facilitate border crossings is under way also.

There is an institutional change at the Ministry of Communications and Transport under way that will allow the government to be in a better position to fulfill its new role.

Among the principal actions that are being considered is the creation of a transport regulatory commission that will oversee the functioning of the transport sector, a strengthening of its planning capabilities, and also strengthening and furthering the research and development capacity of the sector so that it is suitable for technological development.

Other areas in which actions are being undertaken are: to develop infrastructure investment programs with a multimodal orientation; to review transport financing principles and develop suitable reforms that allow for broad public-private sector participation but also that give each sector its proper role; to support export projects and physical distribution systems through Bancomext, which is the official bank to support external trade; and also to keep regulating and promoting telecommunications services and technologies.

As a broad conclusion, what can we say? We can say that in this situation in which the transport sector is in a country such as Mexico, where such large transformations have taken place in the last decade, we are at the beginning of a very large process.

The actions that are currently being undertaken are just isolated actions that need to be focused and need to be encompassed as a part of an overall strategy to develop real public policy contributions to the development of freight logistics.

And we think that through the interaction with groups such as this, Trilog, NAFTA, APEC, we can help and develop these kinds of public policy orientations that will allow the country to develop modern logistics systems.

We also believe that the case of Mexico is not isolated. It is in very many senses representative of the one that occurs now in many developing countries. And we think that in that sense, our country can provide sort of a link and a ground in which these organizations can have a way of dialoguing and developing communication with countries in other regions that are not directly related to one of these organizations.

Thank you very much.

SESSION MODERATOR SUTTON: Thank you, Oscar.

Our next speaker is Kevin Sample. Mr. Sample is a Senior Policy Analyst in the Office of the Secretary of Transportation. He advises all of the OST on various trade policy issues.

He is the author of the Asia-Pacific Economic Cooperation in Transportation Initiative and has been the leading force in the group since its inception in 1991. He authored and organized the first APEC transportation ministerial in 1995 and the first ever DOT domestic trade mission.

APEC Transportation Working Group Status: Update and Report on Task Force Activities

MR. SAMPLE: Good afternoon, everyone. I'd like to acknowledge a few of my APEC colleagues whom I see in the audience today: my colleague from Canada, Kevin Cavanaugh; Dr. Jess Browning from the University of Washington and also a colleague from the Global Transpark.

I have been asked by our host to share a few words with you today on the progress of the Asia-Pacific Economic Transportation Working Group. For those who are not familiar with APEC, let me give a quick overview of the organization and its purpose.

The Asia-Pacific region, comprising some of the most dynamic economies in the world, has experienced unprecedented growth in the last two decades. Economic relations among economies of the region also have increased dramatically, a few by growing trade and financial flows. However, the ongoing financial crisis in the region has also caused severe economic and social problems in several APEC economies, prompting many of them to resort to the facilities of the IMF and other international assistance.

Most of the economies in crisis are making progress in overcoming the problems related to the economic downturn, but much remains to be done to stabilize the region and put it back on the path of economic growth and prosperity.

The Asia-Pacific Economic Cooperation Forum was established in 1989 to promote economic integration in the Pacific region and sustain economic growth. Originally, APEC was an informal group of 12 Asia-Pacific economies. In November 1991, APEC admitted China, Hong Kong, and what we call Chinese Taipei, which is Taiwan. In November of 1993, Mexico and Papua New Guinea joined. Chile joined in November 1994, bringing membership to 18. Peru, Russia, Vietnam have been sending their delegations to most APEC meetings this year and were seated as full members in November.

The United States views APEC as the preeminent multilateral regional economic forum and an integral part of the U.S. engagement in the Asia-Pacific region. President Clinton has underscored that the United States is committed to making APEC a vehicle for liberalization in the region. In 1997, U.S. trade with APEC totaled \$955 billion, rough 65 percent of U.S. trade with the world. U.S. exports through APEC have increased 70 percent since 1990. U.S. imports from APEC have increased 59 percent since 1990.

In Bogor, Indonesia, in November 1994, APEC economic leaders reached agreement on expanding economic cooperation within the region for the purpose of strengthening the open multilateral trading system, enhancing trade, and investment liberalization in the Asia-Pacific region. Leaders announced their commitment to achieve free and open trade and investment in the Asia-Pacific, whereby all barriers to trade and investment are to be dismantled before 2010 or 2020 by developed and developing participants, respectively.

APEC's priority is to remove impediments to business and promote corporate solutions to common regional problems. This brings me to the transportation sector, which has been one of the prime areas of work since the inception of APEC.

The transportation working group studies and recommends ways to improve infrastructure, facilitate movement of passengers and freight, collect and exchange data, and enhance transportation safety and security. The working group became a mainstay of APEC in 1991. The United States proposed that because of the importance of improved transportation links to continue economic growth in the region.

In June 1995, the United States hosted the first APEC transportation ministerial. Canada was the host of the second ministerial in 1997. And a third ministerial is being planned to be hosted by Thailand in late 1999 or the first quarter of 2000.

As you may be aware, one of the truly unique aspects of APEC is that industry and representatives of economies sit at the same table to discuss relevant issues. It is the only international organization to offer such a high level line of ongoing communication between industry and representatives of economies. Industry involvement in all aspects of APEC ensures that any initiatives that are undertaken are in response to real-world conditions. And developing solutions to real-world problems is what we want to achieve.

In fact, at the Washington Hill Transportation Ministerial, there were over 275 CEOs and senior executives who were in attendance. In Victoria, Canada, a similar level of participation was present. The Asia-Pacific region is characterized by dynamic economic growth among market-oriented economies spread over a huge geographic span surrounding the world's largest ocean. A modern transportation system must be one of the foundation stones for continued economic expansion in the Asia-Pacific region. Both the vast distances which characterize the region and the dynamic growth of its economies make attention to transportation a common interest and one which requires a specific regional focus.

Safety, efficiency, and integration in our transportation systems and services are key elements in building prosperity that will benefit all APEC members, regardless of an economy's stage of development. Where there is sufficient transportation, there is energetic trade through business opportunities and close interaction between cultures.

The "APEC TPT" is a term I'm using. "TPT" is a term I'm using for the transportation working group. It's the best vehicle in the Asia-Pacific for cooperation and improvement in transportation linkages. Let me share with you some of our ongoing work in the working group. This work involves every mode of transportation. While the working group has under way some 20 different projects and is growing, I will briefly summarize one ongoing project for each mode of transportation.

In the area of road harmonization, in area roads, the group has been aggressively coordinating the development of road harmonization standards. The TPT is in Phase 5 of a study of analyzing and assessing vehicle standards in APEC. The working group is coordinating its efforts for ongoing work in a U.N. ECE Working Party 29. And every effort is being made for APEC members to get involved with the work of U.N. ECE. Harmonization of vehicle standards is a major effort due to the number of APEC economies that manufacture automobile parts. One of the major goals is to be a major force in the development of a global agreement on road vehicle regulations. The working group has also established a working subgroup on road safety, which is led by Chinese Taiwan.

In the area of aviation safety, which is led by Canada, the group has analyzed 92 aviation safety problems, prioritized them, and identified five significant safety issues. The group has submitted a report for mechanisms on implementing the recommendations on air safety in the region. I'd like just to note that aviation travel in the region is expected to grow dramatically over the next 10 years. And, in fact, it's estimated that 50 percent of the world travel will be in the APEC region.

Maritime. An experts group on maritime safety has been established to identify maritime safety issues and problems in a region, and propose recommendations for action. In addition, the TPT, transportation working group, has established a ports group to increase port efficiency in the

region. This effort is being led by Japan. The group is near completion on a port database, which is a vital first step for all port-related activities of APEC. The group has continued this work and has the

responsibility of identifying relevant port issues in the APEC region and to set up proper actions to address and identify problems.

In the area of urban transportation, the working group has held two transportation seminars, the first in Seoul and the second one in Taipei. The purpose is to assist in the development of transportation systems that help reduce congestion and are energy-efficient and environmentally friendly. The group is currently developing their best practices manual, identifying the best methods to address urban transport problems.

In the area of facilitation, one of the first progresses with a TPT was an electronic data interchange. The effort is led by Australia and continues as the group works to develop a future direction in the adoption of electronic commerce as widely as possible throughout the transport sector in the region. As part of facilitating electronic commerce, the group's goal is to eliminate the requirement for paper documents, both regulatory, institutional, for key messages relevant to international transportation and trade for the next 10 years. The TPT had received substantial assistance from the express carriers, United Parcel Service and the Federal Express, in this effort.

In the area of satellite navigation and communications, the group has under way an effort in satellite navigation and communications. The plan is to develop a plan of action to facilitate implementation of satellite navigation and communications systems in the region. This effort is being led by the United States in connection with the intermodal task force. The SN&C will hold a forum on intermodalism and satellite-based transportation technologies in Singapore May 5th through the 7th, 1999. The objective for this forum is to address the applicability of SN&C's systems in the intermodal environment.

And, last but not least, intermodalism. One of the things we were very thankful for from the Federal Highway Administration is allowing the Deputy Administrator, Gloria Jeff, to chair the intermodal transportation study, which lasted from 1994 to 1997. As a result of that work and the congestion point study, the group decided to establish an intermodal task force to provide guidelines and standards, provisional options associated with the integrated transportation systems.

Actions of the intermodal transportation force are directly linked to the elimination of bottlenecks identified in the congestion point study. The ITF has active participation from industry in developing this project. And it should prove helpful as it moves forward.

As you can see, there is much activity within the APEC TPT. I invite you to join us at our next meeting in April 1999 in Santiago, Chile, followed by our 16th meeting, which will be held in October in Hong Kong. To quote Secretary Slater, "Transportation is the tie that binds. We in the APEC transportation working group are making every effort to facilitate trade by increasing cooperation among member economies."

Thank you.

SESSION MODERATOR SUTTON: Thank you, Kevin.

Our last speaker is Dr. Damien Kulash, who is the President and CEO of Eno Transportation Foundation, a charitable operating foundation dedicated to transportation improvement.

Before joining the Eno Foundation in 1995, Dr. Kulash served in various posts for the National Research Council. He has also been affiliated with the Transportation Research Board and the Congressional Budget Office.

U.S.-E.U. Transportation Policy Forum: Update on the Latest Intermodal Transportation Dialogue

DR. KULASH: Well, you've heard a tremendous range of subjects presented here in the course of this day, but you've heard three themes in common stressed by many of the speakers.

One is the importance of the global economy and the growth in international trade. That theme has come up repeatedly.

A second theme is the great progress that has been made in logistics and the challenges that we all have ahead in terms of making further progress.

And the third thing you have heard is: Why am I here? What do I have to do with logistics? You've heard speaker after speaker say: Gosh, what do I know about this subject?

I think there's a moral in that, and that's that the subject we're trying to deal with here is so big that it far surpasses any of the organizational roles that any of us in our day-to-day responsibilities play with it.

We all deal with one or another aspect of it, but I think probably few, if any, have had an opportunity to try to look at this whole ball of wax.

Folks who are engaged with logistics optimization may not be as knowledgeable about infrastructure priorities. Experts in regulatory policy may not focus on the economic growth implications of transport. Carrier decisions may be made independently from public policy decisions. The shipper requirements and decisions may be made with the ignorance of intergovernmental agreements of any kind.

There are so many pieces to this puzzle few of us see the whole thing. I think part of what makes this discussion challenging and important is the fact that the growth in trade and technology that supports improved logistics are both driving us to do more customer expectations, are driving us to do more. And we face a very daunting challenge. The activity I'd like to talk to you about today in my part of the program deals with an attempt started by the European Economic Commission and the U.S. Department of Transportation to look at how to improve intermodal freight transportation between the United States and Europe.

This has been operated through a series of dialogues that involve a small number of leaders, many private sector folks, shippers and carriers alike. You've got some governmental representatives and some analysts in different aspects of transportation.

It's a small group, about 35 people, of top leaders, deliberately chosen to be small so that there can be a candid and sustained dialogue on the subjects involved. And although we would sometimes stumble over linguistic differences or semantic or cultural differences, the kind of growing culture of the group does permit it to get past some of these differences and get more to the meat of a small number of core issues.

We're not looking for concerted international actions. I think for the most part, the actions that come out of this are in the form of individual coordinated actions that can be taken by the participants themselves or the organizations that they represent.

This group has now met twice: the first time in late 1997 in the United States and then most recently last month in Munich. And it has developed a short list of things that it is particularly interested in. These include — I'll focus on just five here — legal and regulatory issues, integrated logistics and information technology, physical infrastructure constraints, standardization of loading units, and mishap mitigation and liability regimes.

In the area of the liability and mishap mitigation, there's a very tangled and very different set of regimes that cover this in different parts of the world. What your liability is in freight actually

depends on what mode in which the incident occurs, what the mode of origination for the shipment was, the location of the shipment when the incident occurs, and where the shipment started. In spite of the many different and conflicting liability regimes that apply to these shipments, there seems to

have been some progress made in terms of making the whole process of liability more manageable or at least tolerable to the carriers.

One recent U.S. study, however, did find that we need to have more international harmonization in this area. And the discussions between U.S. and European interests pointed out that one of the alternatives now being considered in the United States in the form of COGSA has some implications on European shipments that are not entirely desirable over there. The extraterritorial extensions of U.S. cognizance in this area is troublesome to many European interests.

In the area of integrated logistics, this is really an area where the government does not play a prominent role, nor do most participants want it to.

Our European friends have started a thing called the European Freight and Logistics Leaders Club, where they get together and trade practices and ideas. This has energized many of their leaders to make more rapid progress in that area. The U.S. and the Intermodal Association of North America has formed a best practices group to do some of the things. I think this is a good example of where private responses to such a dialogue can follow through and make good things happen.

On the physical infrastructure side, I think everyone recognizes that infrastructure investments are vitally important to the functioning of the international intermodal system. The bottlenecks in the system got a lot of attention in our first discussion. And there were conflicting feelings about what can or should be done about it. I think part of that difference depends on what sort of infrastructure you're talking about. If you're talking about a rail link or railroad where there's really no close geographic substitute, pointing out geographic bottlenecks takes on one set of connotations. But if you're talking about ports where the level of national and regional and modal competition is extreme, it takes on a whole different kind of context.

On the European end, the European Community is working towards harmonization of policies in this area. They put out a green paper on seaports and maritime infrastructure, a white paper on fair payment for infrastructure use.

On the U.S. side, we do have a complex set of potential and actual forms of infrastructure aid through the intermodal funds that are available through ISTEA and TEA-21, a number of state and regional aid programs, and through cost subsidies that come from port fees themselves. So in this area, I think no one expects that it is possible to have international harmonization, but some good may come from fuller disclosure of the full range of costs in exchanging information on these matters.

In the legal and regulatory area, we have heard a lot about the importance of regulation today. Ken Gwilliam this morning showed a chart where GNP and the freight bill for the nation tracked one on top of the other if you drew it with a heavy pencil right through 1981. But then following deregulation, there was quite a divergence, where the freight bill dropped far beneath GNP growth.

I think that says something, too, about the very important role that deregulation has played in the economics of U.S. transport and logistics costs. We now feel that, at least in domestic transportation, with the deregulation of intracity trucking, that we have in the United States achieved a fair amount of deregulation, as Don Schneider implied at lunch.

The Europeans participating in these discussions pointed out a different form of regulatory constraint, starting with state-owned railroads and a geography where different carriers must connect end to end. And system ownership under a single set of hands, like the United States, is not a geographic possibility. They have adopted a series of open access policies and fee structures, which they're now continuing to refine so these fee structures do, in fact, represent real costs and lead to an overall economical system.

But this form of deregulation, which makes a lot of sense in that historic and geographic context, takes a lot of adjustment to fit within the U.S. policy of private ownership of rail facilities, for example, where similar policies of trackage rights raise questions of property seizure.

Finally I think the most vigorously discussed question dealt with the standardization of loading units. In Europe, I think there's considerable sympathy for greater standardization of these. Many individual companies and countries have adopted a wide variety of swap body equipment. Now, everyone understands that there would be great efficiencies for moving toward a more standard set of loading units.

In the United States, the private sector has led the development of what loading units have been acceptable. Again, Don Schneider's presentation at lunch pointed out some of the tremendous productivity advantages that have come from that. Many feel that this continued flux in this area is still to be expected.

So, although everyone agrees, I believe, that there is tremendous potential for increased productivity through ultimate standardization of loading units, everyone feels that this is a set of decisions that has to be come at differently with each site working on its own territory first, recognizing that eventually these two regimes must come together and, in fact, all the regimes of the globe must eventually come together in a smaller number of more standardized units.

So I think this dialogue does represent a device for bringing together leaders to deal with some of the complex sorts of issues that we're dealing with today as well as has been useful in highlighting on a small number of themes on which progress has been possible.

Thank you.

SESSION MODERATOR SUTTON: I'd like to thank each of our panelists for their contributions here this afternoon.

Sectoral and Industry Characteristics of Logistics - Government Support Requirements

SESSION MODERATOR CALDWELL: If we can all be seated, we'll begin our next session on sectoral and industry characteristics of freight logistics.

My name is Harry Caldwell. I'm the Chief of Highway Needs for Federal Highway Administration here in Washington. I'm responsible for all the investment analysis on the nation's 6.2 million miles of road and 578,000 bridges.

I did two trade corridor and border gateway studies from 1991 through '94, wrote the legislative language for the border crossing discretionary program in TEA-21, and have lectured extensively throughout the world on global freight logistics and the application of private sector business principles to public sector applications; most notably, over the past two years, the application of a business-planning process, which is the combination of the Chrysler Corporation's strategic planning process with Sea-Land's continuous improvement process applied to seven discrete projects along the U.S.-Canadian border developing business plans to improve throughput and safety along that border.

This discussion this afternoon I think is probably going to be one of the most exciting things that we talk about primarily because we're talking about the cutting edge of understanding your customers. In fact, you can change the title of this session to "Understanding Your Customers." That's about what freight logistics is all about, how we adapt processes to meet the needs with an eye toward developing a linkage between customers and government in the provision of facilities, services, and institutional delivery of services, including regulatory relief.

This is the most fluid topic of all the topics in this two-day conference because we're talking about the tactical corporate response to rapidly changing market conditions and a strategic corporate response for companies to position and restructure themselves and their operations to anticipate and take advantage of emerging trends in the marketplace.

We're lucky to have several speakers with us today. We're going to start with a global perspective of measuring the impact of logistics on the U.S. economy, continuing down through a discussion of some cutting edge work in ITS freight identification technology.

Ken Churchill is going to talk about one of the most dynamic sectors of the market, the small package business, UPS, talking about adaptations to a changing marketplace.

And, finally, Jose San Martin Romero, our friend from SCT, who is now walking in, is going to talk about some of the institutional challenges of logistics requirements of multinational companies in Mexico.

Inside the handout that you have, you will notice in this section the report that we have included. And you'll notice at the beginning of that report we noted that this is a paper that has been prepared for a report to Congress, the National Highway System Connector Study.

We have commissioned some people here in the States to develop an overview of emerging trends in freight and defense logistics as part of a congressionally required study to assess our national highway system connectors here in the United States.

I would ask you to take this paper, make any comments that you think are appropriate on this paper to improve the understanding of the emerging trends in freight and defense logistics, particularly the freight side, send those comments directly into us because this document is going to

form the basis for a lot of public sector involvement here in the United States trying to get executive decision-makers to understand better what is happening in the marketplace.

There are four items that I already know based on reading this and based on hearing some of the comments today that need to be included in this paper. Don Schneider and several others talked about alliances this morning.

One of the major trends in industry, shipper-carrier alliances, carrier-carrier alliances, shipper-manufacturer alliances, the one area that is obvious in its omission is the public sector-private sector alliance. And I'll make some comments about that.

Another area is the change from price-based costing to cost-based pricing. Now, you have to think about that for a moment, what that means. Fifteen years ago, logistics people considered their costs and then gave a price to a customer based on that cost plus profit. That's changed. Customers are now in a position to demand. They give you a price. And then you have to come up with a cost matrix to work within that price. If you can do that, you survive, and you make a profit. And if you can't do that, you go out of business.

One area of manufacturing logistics that has not been mentioned today is postponement. It sounds vaguely sexual, but it isn't. It refers to the delay of value-added in manufacturing as long as possible from raw material through intermediate goods through finished product.

Don Schneider alluded to that when he made the observation about the auto industry. We're now seeing occasions where companies that have a variety of end products try to delay the adding of value in that product for several reasons: one, to reduce the number of SKUs, the stock-keeping units, that they have to maintain inventory on; second, to delay the cost occurrence as they add value in that product; and, three, it allows them to take advantage of rapidly changing market conditions.

Another area is the advent of pull logistics, as opposed to push logistics. The use of information technology allows companies now to resupply and reinventory using pull logistics, which to my mind is a perfect mirror to those of you who are handymen or women.

When you solder a copper pipe at home, you have a cold system, you apply heat and flux to it at the moment the demand is there. It pulls solder into the joint exactly when, exactly where, and exactly in the right amount that's needed to meet the demand. It's hard to imagine that analogy, but that's exactly what pull logistics is all about.

That combination of price-based costing, the development of alliances, pull logistics, and postponement all suggest that we're all going to be burdened not only by an increase in demand but a very spiked expectation from customers. And that's what drives improvements in the logistics system.

A final comment I would like to make is some ideas about this concept of alliances. I do think that in the United States and Canada, that since the beginning of our countries, the public and private sector have been at somewhat arm's length.

At the very best, it's been we operate the system and watch out for the public interest in safety and competitiveness. In the worst case, it's an out and out adversarial relationship.

I think that we need to revisit that. Not only is competition in public safety in the national interest, but so is productivity in the national interest as we compete in a global marketplace.

There are some things that we could think of as possible forms of a new public-private alliance to improve productivity here in North America. Let me just give you some examples: first, a public test bed for the application of ITS freight operations applications to improve supply chain logistics based on the Pueblo test track facility in Pueblo, Colorado; second, the creation of

binational shared international ports of entry, which are international territory with binational Customs and immigration operations; third, the possible creation of international trade corridor corporations, which would have a multi-jurisdictional board of directors that have the authority to issue debt, capitalize a corporation; and to sell equity positions. Imagine buying stock in a trade corridor.

The consideration of developing ISO standards for ports of entry or trade corridors or other major freight areas. Just think what you would have if you were able to advertise that you are ISO-certified at a port of entry, meaning that you had certain regulatory procedures and processes that met certain international standards. I think we need to benchmark international traffic lanes. I'd like to see us benchmark from Kowchung to the New York garment district, as an example.

There's an area where we can use ITS to capture information that's currently lost. MIT's School of Business says that if we could capture information just in the retail sector of stock outages and stock overages and make that information, loop it back to the manufacturers, you can get an 8 percent rate of return on investment, 8 percent just from that information. And, believe it or not, Fortune 500 companies in this country don't pick up that information.

And, finally — and this is the biggest stretch — I think we need to look institutionally at a means of reflecting public sector compensation based on the performance of the system. In the public sector, if you're responsible for administering or executing a system, if that system works better, you don't get paid any more. And if that system works any worse, you don't get paid any less. So as long as you have that kind of schism between the public and private sector, it's very tough to get some rationalization of that process.

Finally, I'd like to say that the Y2K — I'm glad somebody brought that up. We don't need to be hysterical about Y2K, but this is a venue that I think we ought to take the opportunity to make and continue to make the point about Y2K and the preparation for Y2K. The estimate in the United States is that Y2K compliance is going to cost \$600 billion. And that cost goes up every day. The longer you delay, the worse it is. There's an estimate that between 20 and 35 percent of all U.S. small businesses may go out of business as a result of Y2K because of cash flow problems. Y2K is more than just an annoyance of an elevator that won't work or a car that won't start.

Of the two biggest concerns I think we need to think about, one is called the flight to quality. Some of you may have heard that term. If you're in logistics, a very information-intensive business, if you're in insurance, if you are in banking, you're in any kind of financial services, lots of companies are looking at those unsteadiness, making judgments about how Y2K-compliant they are. And they are moving their portfolio to and among those operations based on that knowledge.

The second thing we need to worry about is the public response to Y2K. We have a czar in Washington, D.C., in charge of Y2K, but with the emphasis now on our President's problems and our friend Hussein and all the rest of these things, it doesn't seem to be making the front page. And the more that we can get this in front of the public eye and calm people down, the less the likelihood that Y2K is going to have a tremendous impact on our economy.

That said, let me introduce Jake Jacoby. Jake is with our Office of Policy at Federal Highway Administration. Jake has I guess now about 30 years of experience in the public and private sectors and academia. He's an economist, and he speaks English, which is a useful thing for an economist.

Transport Sector Investment and Industry Productivity

MR. JACOBY: Good afternoon. It's a privilege to come on so late in the afternoon when I have the honor of addressing true devotees of transportation and logistics.

A recurring theme in many of the previous presentations has been the need to identify effective public and private alliances. Clearly the path of economic growth in modern industrial societies is not determined solely by the spontaneous actions of private business.

Government is inextricably linked and entwined in the economic process and an important determinant of overall economic performance. Nowhere is this more obvious than in the area of transportation infrastructure provisions. Some speakers have even suggested that government might provide transportation infrastructure, over which Mr. Schneider's trucks might operate.

In the United States and elsewhere in the world, public investments in transportation have been made to support economic growth and development, spur economic growth, and create the benefits of good jobs and good places to live for the population. Decisions about the overall level of public spending on transportation improvements and which improvements to pursue pose some very difficult choices to policy-makers.

Until recently, however, transportation decision-makers were forced to rely almost entirely on anecdotal evidence, partial economic assessments, or their own intuitive understandings of the relationship between transportation investment and economic outcome when making these choices. I want to share with you today research which may help to make national transportation investment policy decisions less intuitive and more closely aligned with economic principles.

A recent study titled "The Contributions of Highway Capital to Output and Productivity Growth in U.S. Economy and Industries" by Professors Nadiri and Mamuneas provides quantitative assessments of the contribution of highway capital to industry and aggregate productivity growth. In the process of doing so, it measures the commercial benefits of highway infrastructure investments. Importantly for this conference, it provides a backdrop for a better understanding of the mechanisms through which public capital affects private sector economic decision-making. Here are a series of six questions, which have driven this research.

The first question we would ask is: What is the effect, if any, of highway capital on industry costs of production? Nadiri and Mamuneas provide econometric analysis, econometric study, which essentially concludes, a major conclusion of that study is, that it reduces the total cost of producing a given level of output in almost all industries and all sectors of the U.S. economy.

I've indicated the nature of that cost reduction with the blue arrow there. That is to say, infrastructure capital has the effect of reducing the cost function of industries.

Next slide. The magnitude of that arrow is measured by something called the cost elasticity with respect to highway capital. It, in fact, expresses the percentage change and the cost per unit attributable to a 1 percent change in highway capital.

We call this effect the productivity effect. It varies across industry sectors. It is relatively large in such industries as agriculture, food and kindred products, transportation and warehousing, of course, retail trade, construction, and other services. In the manufacturing sectors of the U.S. economy alone, it ranges between 0.04 and 0.06.

You'll notice the signature in front of that is negative, indicating that highway capital is what economists call cost saving. Smaller impacts are observed in the textile and apparel sector, furniture and fixtures, metal, and nonmetallic mining.

If you take an output weighted average of the industry cost elasticities, we find that for the economy as a whole, on average for the period 1950 to 1991, the cost-saving impact of highway infrastructure investment is on the order of 0.08.

0.08 is not a very big number. Intuitively, you say: Why is this important? Well, first let me give some perspective to that number. 0.08 is a number that will be applied against the total gross volume of transactions in the U.S. economy.

We have currently about a seven and a half trillion-dollar economy. And the total volume of all transactions to produce that value of final goods and services is about one and a half times that much.

So 0.08 is a relatively small coefficient but is being applied against a very large base. Consequently, the effect of highway infrastructure on the economy in terms of its productivity effect is quite strong.

The process does not stop there. When the costs of production are reduced, prices can be reduced. When prices are reduced, the demand for the products offered up for sale increases. The change in output associated with the reduction in cost attributable to the highway infrastructure investment produces something called the output effect. An interesting finding in the current research is that the higher total production costs; that is to say, as you produce more of the product, you would expect total cost of production to increase. You have to buy more labor, more capital, more intermediate goods.

The higher total production costs associated with the output expansion is financed almost entirely, not quite, but almost entirely, by the productivity effect of highway capital. In other words, in simple terms, almost oversimplified terms, highway capital's effect on the expansion and output in the economy is self-financing.

With such a strong effect in terms of productivity and in terms of output expansion, one would expect that highway capital would have some effect on the demand for labor, capital, and intermediate goods, semifinished goods. And, in fact, it does.

We asked the question: What are the impacts of highway capital on private sector demands for labor, capital, and intermediate goods? In the upper left-hand corner, when the output level is held constant, that is, when the productivity effect only is examined, highway capital acts as a substitute for labor, a substitute for material inputs, and a small complement to provide capital formation.

When the output level, however, is allowed to vary, highway capital becomes a fairly small substitute for labor, a fairly small substitute for materials, and a large complement to private capital.

The implications of this finding are: Road system investments change the private input ratios in almost all sectors, in almost all industries. That is, it alters the way in which business does business, the way it combines inputs. The opportune mechanism perhaps, an active mechanism, is the logistics changes that have occurred in the U.S. economy.

Both the productivity and the output effect of highway capital lead to a crowding in of private capital. This implies that highway capital spending is a prerequisite for growth in private capital formation and may contribute to investment-led economic expansions, such as the one we are currently experiencing in the United States.

Having determined the nature of the effect on the cost of production and output, we asked the question: What are the marginal benefits of highway spending to industry sectors? Marginal benefits are, in fact, a measure of an industry's willingness to pay for additional units of highway capital.

Industries' willingness to pay depends on the cost elasticities that I reported a moment ago and the industry production costs relative to the size of the highway capital stock.

I can report to you that it is positive in all but three relatively small industry sectors. The marginal benefit of a dollar increase in highway capital for individual industries ranges between 0.2 and 0.6 cents.

However, because highway capital is a joint use good and we assume that there is a non-rivalry in the consumption of highways, then you would sum the marginal benefits across all sectors to estimate the total effect on the U.S. economy.

At the national level, the gross marginal benefit from a \$1 increase in highway capital is about 30 cents per year over the design life of the underlying investments, the safety belt of a strong rate of return. Let me emphasize the word "gross" marginal benefit because this calculation does not include the depreciation or the deterioration effects of roads through their usage.

What's the contribution of highway capital to productivity growth in the U.S. economy? This is a very fundamental, a very important economic question, and it is a question that was originally raised back in the late 1980s and propelled some of the early research.

The contribution of highway capital to productivity growth in the U.S. economy is positive in all sectors of the U.S. economy. The contributions vary across industries and over time.

On average, total highway capital contributed about 15 percent to total factor productivity growth at the aggregate economy level over the 1950 to 1991 period. However, that has varied over different time periods.

The contribution during the 1950s, 1960s was on the order of about 30 percent, quite high. It began declining in the late 1970s to approximately 7 percent and in the 1980s and in the very end of the 1980s, it had fallen to approximately 4 percent.

Highway capital spending contributes significantly to the productivity growth rate of the U.S. economy, has done so for the last 40 years. However, if I put that into perspective, the main contributor to productivity growth in industries and the national economy is exogenous demand. That's all of these other things that are happening: income, population growth, innovations in logistics and other technologies.

From the information available, just recorded, it's possible to compute a net social rate of return from road investments. And that social rate of return is really nothing more than the sum of the industry marginal benefits divided by the cost of highway capital minus depreciation.

As a note, when taking the cost of highway capital, we have included in this analysis a price distortion effect of taxation. This is debatable whether this should be used or not. It's usually employed in the case of personal income taxation and ad valorem taxation, not in the case of highway user fees per se. However, the result is to make the estimates of the rate of return on highway capital conservative.

The average return over the period 1950 to 1991 was 32 percent per annum. However, returns were very high in the 1950s and '60s and began falling in the late 1970s. And by the end of the 1980s, the rates of return on total highway capital had converged to approximately the rate of return on private capital.

As a further comment to this result and this conclusion, I note that these numbers are for the total highway system in the United States, but the non-local highway capital or upper-level interconnective high-level roads produce rates of return that average about 5 to 7 percentage points greater than total highway capital.

I would also point out to you that this is based entirely on commercial benefits of highway investment and does not include consumer benefits, including work-related trips.

Major findings or conclusions of this research are as follows. Highway investments reduce the costs producing a given level of output in almost all industry sectors. This is called the productivity effect of highway capital. The reduction in costs of production result in the reduction of prices of products and expansion of output. Cost savings that lead to output expansion are financed almost entirely by the initial productivity impacts. Highway capital is a complement to private capital formation and may be a prerequisite for investment-led economic expansions. Highway capital makes a significant contribution to U.S. total factor or productivity growth and produces net social returns, which were very high during the interstate construction era but have declined considerably since the 1980s. By the end of the 1980s, the rate of return on highway capital appears to have converged on the average rate of return on private capital. In economics, we refer to this as equal yields at the margin. And that implies that the quantity of highway capital is approximately optimal in terms of its commercial benefits.

Go to the last slide, if you would. This research is available to those of you who would like to have a copy of it on the Internet. There is also a summary of this work available there. And I urge you to link in and download and take a close read.

Let me have one final comment, and that is as to the conclusion that infrastructure investment has been declining since the 1980s. It's a significant conclusion apt to produce some concern in some quarters.

One explanation of this is that the productivity of highway capital has actually declined; that is, that there was a great demand for high-level roads during and prior to the interstate construction era, which was addressed by interstate highway construction. And, as we have put highways in place, the needs, the commercial sector's needs, were met.

Alternatively, there may be relative disinvestment in the highway system to produce the same results. That is, the crumbling infrastructure that was so well-documented in such things as the National Council on Public Works improvement and other publications in the 1980s, "Falling Bridges and Potholed Roads," means that the productive flow of services of highway capital have declined because of inattention and a lack of funding.

This analysis only goes through 1991. And so we have not yet had an opportunity to evaluate the effects of increased spending since the early 1990s under ISTEA and TEA-21.

I look forward to doing a revisitation of this research at a later date to assess whether or not increased spending has reversed the pattern of declining returns from infrastructure investment, highway investment.

Thank you very much.

SESSION MODERATOR CALDWELL: Thank you, Jake.

In addition to being a knowledgeable individual and foremost in his field in this area, Jake is also an accomplished and avid fisherman. And I understand that some fish have been known to jump into his net just by the sound of his voice. Others have jumped on the bank in a noble act of self-sacrifice.

So our next speaker is Gordon Fink. Gordon has a long and illustrious career, both public and private sector, most recently participated in a conference in Reston, Virginia, that Gordon did the lion's share of the work organizing on behalf of ITS America on freight identification technologies. And that has led to a public-private partnership focusing exclusively on this topic.

So, Gordon, the floor is yours.

Telecommunication Trends: Focus on Freight Identification Technology

MR. FINK: Good afternoon. I am with an association called ITS America. The first viewgraph gives you a quick overview of that organization. Some of you here know of the work that we have done in traveler information, freeway management systems, transit. And the work we are doing is part of the partnership Harry mentioned where we have a relationship, a partnership, with both federal highways, federal transit, MARAD, Office of Intermodalism.

We have done an awful lot of vehicle work, safety work. And those successes now are really expanding and growing, with the emphasis on deployment.

My job on the staff is to move the organization into new areas. One of those areas is intermodal. The other I'll just mention in passing is electronic payment systems, where we will be having a similar conference to bring together the transportation applications parking, transit CVO and toll, the credit card providers, smart card providers, and financial institutions to try to move it out of the current state of the back rooms not being able to really talk with each other.

Today I'm going to talk a little bit about our intermodal activity. At ITS America, one of the things in those areas I've just mentioned is that we proposed that we needed an actual architecture.

And we helped federal highways put a national architecture together. And as a result of that architecture, we are now leading an activity in the international standards area to bring that architecture into effect by standards. And there are over 100 standards in some status of balloting and being proposed. And that's an important way of implementing the results of our activity.

The next slide shows a little bit of the background of our work in the intermodal area. We have an intermodal task force that was set up about four years ago, but it really couldn't gain the momentum. And part of that was that we didn't have the right participants in the membership.

And we are a volunteer organization. So we depend on our ability to attract people to invest their time in furthering the work, whether it's research, deployment, institutional issues, legal issues, etc. So three of us, myself, Mike Onder from Federal Highways, and M. J. Fioko from Rich Biter's office, put on a workshop in 1995 in Hanover, Maryland. It was at the Maryland State Highway Administration Building.

And it didn't go very well. One of the problems was that this was an industry that had just been deregulated. We used the words "architecture" and "standards," and they said: That sounds like regulation.

There aren't associations that have the common denominator to bring the shippers, the rails, the ocean carriers together. And so we did that for the first time.

So I was told: Well, we did have a lot of success. You've got them talking together, and even though it wasn't necessarily in the same music.

So we in the next two and a half years started an outreach program. I worked with associations, the IN organization, American Association of Ports, AAR, a lot of our membership.

We had a second workshop in June of 1998 in Reston. And that workshop was the opposite of the other. It was really a smashing success. The proceedings of that workshop are on our Web site. They were put on three months after the workshop was completed, which is a record, I am told,

especially by my TRB friends. And there is an executive summary in your notebook of that workshop.

Out of that workshop, where there was an awful lot of momentum that was developed in our breakout groups, all of which did some outstanding work. We formed an intermodal freight technology working group. And we had a large number of people that volunteered to be a part of that group. It meets quarterly. We had our first meeting in September. The second meeting was a couple of weeks ago in Long Beach.

The next chart is a pictorial of the membership of the working group. The co-chairs are: Bill Hamlin, who is a Vice President of Sea-Land at Charlotte, at their corporate headquarters; and Rich Biter, who is here, from the Office of Intermodalism.

The concept is to have segments, for instance, the rail segment that reaches out. We have two members, two rail members. And the concept is to have a couple of members in each category. Their job — and this is Union Pacific and Norfolk Southern — is to reach out to the other rails, both the other two large rails, remembering that Conrail is going away, as well as the short lines and those port-operated lines that are operated as part of the intermodal system.

So the same is true for the ocean carriers, the ports, and terminals. DOD is represented by Ed Coyle. His job is to bring in TRANCOMM, associations like the National Transportation Defense Agency — I'm not sure I have the words in the right order but associations, other parts of DOD, and the JCS. So he is a segment head. So he reaches out and brings together his segment in what you would also associate as a subcommittee.

I might mention a couple of others. Labor is a very important element. There were some questions this morning on labor, the challenge that represents.

We are still working. We have a representative of labor, but we are still working to make sure because labor in itself is complex depending on the geographical location and the entity. But we feel that's a very important element to have as a participant in the working group. And you can see some of the other activities.

Next chart is a purpose that we derived at the first meeting, the September meeting, but spent a couple of hours more on in the December meeting because it was a very good therapeutic activity because the group really bought into this in a corporate sense.

You can see that they're committed to apply ITS in a global intermodal logistics chain, words that have been used here, most importantly to optimize the asset utilization, reduce costs, speed the transit system to add value to the customer — and we kept coming back to that point — and then benefit the environment.

UPS is one of the examples. They have taken some of their rolling stock off the road and are moving it to rail. And that benefits the environment, as an example.

Also, buried in our list of objectives, which I won't bore you with, is to make recommendations, provide advice to a number of groups, including the DOT.

There are a couple of activities I would like to note. MARAD has a cargo-handling cooperative program, CHCP, that I'm also a participant in. They're an organization that can execute projects and will be as this group will be, as I'll outline for you.

That group is the group that came up with the standard tag for the rail cars. It took them a long time to do that, but they were the group that reached accord on the standard. And then eventually the rails implemented that standard, to give you an idea.

The other is Rich Biter's office has a program that will be out for quote. He has asked us for advice. That comes out in the spring. He has a budget. And he will be funding those projects. But those are two as examples that this group will be able to provide advice and recommendations on.

The next chart identifies the projects that the group has picked as pilot projects. The first two are the ones that we're placing a lot of emphasis on, and I'll mention why.

First is the intermodal trailer chassis identification and location. For those of you who aren't aware, there are chassis pools that exist in terminals. In some cases, there are a fairly large number of chassis.

A dray operator or a truck tractor operator for — I'm not sure what the degree of language use is, but I'll state plain — comes in, not only picks the box up but he picks the chassis up, takes it out of the gate, delivers it, is supposed to come back because it's part of a chassis pool that the carrier operates.

Well, there are two problems with that. One is that some of those tractor operators borrow the chassis. And it may spend two or three or four weeks before it comes back into the system.

And the second is because of maintenance and other problems, it gets deadlined, lost someplace in the system. And this means that there is inefficient use of a valuable asset and is the way one of our carriers noted. He said: I've got a request to buy 5,000 more chassis. If I could make better use of what I've got, I don't have to do that.

So we are embarked on a program to look at different technologies, to identify and locate the chassis within the United States, maybe North America, depending on the participants in the test, feed that information back into an information system, which I'll discuss in just a minute.

But I'll mention that the third project, the intermodal container identification and location, is one that we have identified and will be working on. But we're putting it off in the future.

One thing that is applicable, some of the technology we'll be looking at for the chassis-tagging activity is applicable to containers. But most of you in this audience know that there are some 8 to 10 million containers.

Those containers spend only a small part of their life in the United States. And the other part they're at sea or in a foreign port. So it takes a different audience, a different group to address that. We've picked one that's more contained, the trailer chassis, bounded by geographic boundaries in this case, to start on.

One very important part — and I happen to come from the systems engineering area — is that we were kind of all over the scale on parameters, such as location accuracy, how many locations a day, battery life in tags, transponding or RFID tag.

So we have a volunteer who is putting together our concept of operations, our requirements. And this eventually will lead to architecture.

We'll be modifying and updating that as we learn from some of the tests and demos. And then it's from that architecture that you can either propose a modification of existing standards or development of new standards. So we are applying the discipline up front. And then it will be applied as we move.

The next chart I'd like to spend a couple of minutes on. Our first meeting, as you can imagine with any group, was all over the scale as far as topics and what people wanted.

And an awful lot of that discussion was like some people would go into a Radio Shack and they're kind of mesmerized by the technology and tagging, identifying things, satellite tracking.

I said: But that has to feed an information system. And we need to give parallel emphasis on the information system. So I came up with this chart. It shows across the top the freight assets, both the container and the trailer as they move from the shipper over to the consignee.

On the next line are the fleet assets that move those containers and trailers, the tractor, the chassis, the rail that would be double stacked, comes back potentially to a dray operator, goes into a port. And that's, of course, where you see the international line.

And down at the bottom, you see ITDS, which is the international trade data system, which you will be hearing about tomorrow. So I won't cover that.

U.S. Customs is a part of that activity. And, of course, the ocean carrier takes it to a port, and some of that reverse process takes place at its destination.

The information systems are tracking across the different carriers. And the way I'd simplistically describe it is the investment has been made to improve the vertical information systems handling ability.

They're in many, many stages of upgrade. But, for the most part, it's within their own area and not across the horizontal. And that's the emphasis I'm being able to communicate in an interoperable sense with the other modes.

So in the case, for instance, between the port and the ocean carrier, you see a common information tracking system. And that is because some ocean carriers operate the terminal as well as the ocean carrier, the vessel itself, so that you have a common information system.

As an example of what we have learned to call islands of success, now at the APL terminal in LA, when a rail car comes in with that tag that's been put on it through the AAR, up pops on the screen the four container numbers for each card that's coming into their terminal. And most of them have been pre-manifested and know right where to take them.

We would like to have that same kind of interoperability across that whole horizontal line. The bottom line I won't spend much time on, but the group asked me to put it on. And that is there is a related financial system where one dray operator has an invoice. There's an accounts receivable set up. And so there's a connection, both vertically and then also horizontally.

That chart depicts in a simplistic sense — and, by the way, I think Gerhardt is going to use it in his new textbook — what happens across the modes.

We are in the process. Our next meeting will probably be during TRB for a couple of hours just to review the chassis tracking activity. We're in the process of looking at funding sources, both within the companies as well as from public funds. The port authorities are interested in potentially providing some funds.

But it is an action-oriented group. It's got senior people from the operations departments from the different carriers at the table. And that's the difference. And we are emphasizing the need to expand it.

We are still going out and recruiting shippers to be a part of it because we don't want to lose sight of the customers and intermodal carriers, but there roughly are now 22 people participating. We hope that number eventually runs from 20 to 25. We have set an upper limit just in a practical sense. But it's been very encouraging for some of us who have spent a while trying to get something like this started.

I understand from Rich Biter that the Europeans are interested in setting up a mirrored organization and maybe doing some things jointly with us in the future as we mature.

That's the end of my presentation, Harry, two minutes early. And I'll take questions at the end of the panelists' time. Thank you.

SESSION MODERATOR CALDWELL: Thank you very much, Gordon.

Our next speaker, representing the United Parcel Service, Ken Churchill, is a vice president with the company. I do not have a bio on him. So I will ask him to introduce himself, if he would.

UPS has been extremely helpful in working with the Department of Transportation in providing information to us on their logistics concerns and some of the emerging trends in their industry to help educate the public sector of the needs of that particular sector of the economy.

So welcome, Ken.

The Package Express Industry in the Global Environment

MR. CHURCHILL: You say I don't have a bio. I'm just an old truck driver here but excited about being here because of the opportunity to learn.

I think it's important, what we're doing here these couple of days to the great extent that we are not only learning but we are also probably forging the concepts that will make a difference in the days to come.

I am going to keep my remarks relatively short. I'm reminded of the sage old wisdom that says that the mind can only retain what the seat can endure. And you folks have been sitting all day long. So I'm going to be right to the point.

In thinking about spending our time together for the last few days, it occurs to me that what's taking place here fits into a book that I read some years ago, a book on just plain common sense. And it was a book that related itself to the individual who is affected, the individual who is able to accomplish something with his or her life.

This research that was done to produce this book went back through history, looked at all great leaders, all effective organizations, looked at wisdom literature, put it all together, and came up with something that was extremely simple and extremely just plain common sense. And I think it really applies to an awful lot of the efforts that are occurring with this conference, these organizations that are represented here today.

If you would take a few minutes, let me highlight those things that they say are highlighted through history that make any effort successful. Number one is an attitude of a determination to be proactive. And proactive simply means see things as they can be, not as they are.

All of us see ourselves as proactive individuals, but when we get right down to it, the tendency is to always go back to the form of doing things the way we have always done it before, right? So those who produce breakthroughs are those who are willing to break with the current way of doing things. So productivity is the first characteristic of an effective individual or association or effort.

The second one according to this book was that there is an end in mind. In other words, it's not this project that's in the end but, more specifically, what is the goal out there? Where is it that we eventually want to end up?

And then that drives. That becomes the true north for all of our efforts. Too often the means becomes the end, and we get so engrossed in doing this that we forget where we're going. The idea is to always know where true north is.

The third characteristic of an effective effort organization or individual is that having that in mind of where we're going, what the dream is, what the vision is, that they do first things first.

There's always more to do than can be done, choosing only those things that will effectively lead us to that point of where we are going. It's so easy to get wrapped up doing good things that aren't the best things and having the wisdom to decide which the best things are so that we can achieve the end to which we are moving.

The fourth characteristic of an effective organization, individual, or effort is simply the fact that there is, as the book terms it, a willingness to seek to understand before understood.

I think that's what this conference is about: listening to each other so that we might understand, not to bring our message so much, but to bring our message but also to understand the perspective of others.

And I'm going to share with you this afternoon a perspective, but I'm also a bit selfish by being here because I seek to understand the other perspective so that eventually we might reach the goal of efficiency that we are looking for in economic development.

The final characteristic of an individual, a group, any effort that seeks to move along is that they look for synergy. The idea isn't to take our form of transportation, our form of economic development, our form of doing things.

But in bringing all of this together with an end in mind, we find areas, which in cooperating together, we can accomplish more together than we would by our individual efforts. I think in this global world, that we are quickly discovering this neighborhood that is closer than we are used to thinking about it as being. This idea of synergy really starts making sense.

I've been reminded by our moderator that UPS prides itself in timely deliveries. I'm going to stick to my notes here. In fact, I'm going to read them so that I'm on time. Otherwise, the company's reputation is in trouble.

And he has also threatened me that if I don't finish on time, he's going to make me listen to my own speech. So, with that threat in mind, I'm going to zero right in.

Microsoft has an advertising slogan that simply says this, "Ask the question: Where do you want to go?" UPS has a tag line that says, "Moving at the speed of business."

As we examine the future of logistics services, all of us should be asking: Where do our customers want to go tomorrow? And how fast can we get them there? I think about that every day. I'm sure many of you do, too. I also know that you know that there are as many answers to that question as there are customers or people that you serve.

One thing that is certain, however, is that it's no longer enough to simply keep pace with customer demand. We must be able to anticipate needs and deliver solutions to problems and issues as they emerge.

UPS is a 91-year-old company that delivers 12 million packages a day in more than 200 countries and territories around the world. The nature of our business links us closely to the flow of trade in commerce. We are, in effect, global trade facilitators, the distributor that forms the backbone, we believe, of trade.

Not only do we deliver packages around the world, we are considered a full-service delivery carrier or an integrator, as is commonly known. UPS provides full logistical support through the entire range of a company's product cycle, all the way from the facility planning to product testing to fleet management.

Our vast information technology infrastructure also enables UPS to provide information about a customer's shipment throughout the transportation cycle and across modes.

Indeed, transportation logistics is now recognized as a factor of strategic importance to most businesses, whether big or small. It's one of the last areas — and this is the key point. It's one of the last areas where dramatic cost savings and competitive advantage can be gained in the marketplace.

This reality was well-demonstrated in the PC industry when Dell Computer announced its last quarter earnings. Maybe you saw that. Up 54 percent, more than four other top vendors combined.

But here's the statistic that jumped out. Get this. Dell only has eight days worth of inventory on the shelves at any given time, only eight days worth. That's less than one-fourth of what they had three years ago.

To us, that's an indicator of where business is going. There is a change. Gateway, Compaq, IBM, Hewlett Packard, all of the other vendors are tightening their own supply chains and developing other strategies to try to keep up with Dell in this particular new move.

We believe that the current economic challenge will force an increasing number of companies to reevaluate their traditional methods of shipping, warehousing, and receiving goods.

Advance transportation and logistic management systems will become even more popular as companies look for ways to reduce costs even further.

Companies today are realizing that they can reduce costs by reducing inventory and warehousing, which leads to another question that's on everybody's mind: How much better can we get at this business of logistics? To which I would reply to you for our discussion this afternoon the answer is one trillion dollars.

That's how much better we can get. That is the value of merchandise sitting in warehouses across the United States at this very moment. Logistics can take that statistic and make it a dynamic.

I think that's what we're talking about during this conference here. How do we change the world? How do we move much more efficiently, much more quickly to meet the new demands of the new world in which we live?

Today, for many customers, the UPS fleet assumes the warehouse function. Parts and components come off of our vehicles at one end of the operation. And final products are loaded onto other UPS trucks at the other end for delivery to customers. It keeps the supply chain in continuous motion.

But, of course, it must be connected by information. It must be connected with information that's held in confidence no longer protected by mortar and bricks and security guards but new systems.

And I don't believe, nor do you, that we are trying to get rid of warehouses. That's not the answer here. But we can reduce the trillion dollars worth of inventory that is sitting and while it's sitting becoming obsolete. We need to be able to move it forward. And the advantage is \$500 billion in value redeemed.

The lesson is clear. In a business widely regarded as commoditized, superior logistics management can suddenly and dramatically tilt the balance of competition. That is the new model to where the world is going.

The characteristic of an effective organization, individual, remember, we said proactivity, not what is, but what could be. And where competitive advantage occurs, it's to those who think that way, not those who forever are trying to maintain what is.

To gain competitive advantage and not to relegate to commodity means getting tighter focus on your core business and wrapping it around value with strategic partnerships. Today UPS is taking many new exciting forms, whether it's through electronic document exchange or a new wave of inventory financing, credit guarantee, and other trade facilitation services that you'll be hearing about in the months to come.

Logistics and supply chain solutions will be the prime beneficiaries of these new systems. In a recent article in the *California Management Review*, an article said, "Today's expanded

information flows provide unprecedented opportunity to build new logistical systems." In fact, they said that, "Delivery speed today is what costs and quality were of the '70s and the '80s. In the new millennium, it will be speed that will be replaced by agility or flexibility as the determining factor of commercial success, both for a company alone, for a region, and for a country."

Gaining agility, creating that seamless enterprise network is not something that most businesses can do on their own, not even if they're going to devote enough people and resources to the real battlefield of marketing and product development.

The express transportation industry, which I represent here today, plays what we believe is a critical role in promoting trade and investment that ultimately fuels economic growth.

Efficient distribution of goods drives competitiveness. Any world-class manufacturing facility must have access to the world's sources of raw materials and components as well as the world's market for its product.

They must have access to efficient distribution services that enhance their ability to maintain a cost-efficient and just-in-time flow of raw materials and components.

Remember Dell. Eight days worth of inventory. They are relying heavily on this business of just-in-time, seamless, efficient flow, land, air, and sea to be able to stay in the market leadership that they're in.

Efficient distribution is essential to trade. To ensure future economic growth, it's critical to advance global trade and to ensure the free movement of goods across borders.

We have run headlong into some formidable trade barriers, manmade walls, really. These are the ones I'd like to share with you this afternoon. And those are at a very high level.

A couple of these, you're going to say: What does that have to do with us? And I would just beg you to listen and think of this. It's a shrinking world.

What we need here more than any time in all of man's history is synergy. It is not to compartmentalize but to find the efficient commingling of efforts and visions and dreams so that we can together accomplish what is being demanded of our customers here in this town and around the world.

A global distribution initiative must address multimodal transportation issues, including air, land, and sea. Let's look at the air transportation liberalizations.

Reforms springing from GATT and the world trade organizations have opened up areas such as financial services and telecommunications. And while there has been some liberalization, certain sectors within air transportation remain completely closed.

The regulatory grip is somewhat surprising, really, because if you follow the growth of air traffic around the world, you'll see a direct link to economic growth. The two go hand in hand. Traditional bilateral agreements are outdated and ill suited to the new lines of business offered by the air transport industry.

With the growth of the express transportation sector, fueled largely by the need for businesses to remain competitive and cost-efficient, services such as door-to-door, time-definite deliveries are now the order of the day.

These services were virtually nonexistent two decades ago, when most of the latest agreements were signed.

UPS, along with others in the express industry, recommends that more economies adopt open sky policies, both in the United States as well as among themselves.

Expansion of air traffic rights would grant greater access to markets and bring about major benefits for the industry as a whole. Often customers and businesses are forced to pay more for goods because distributions are not truly open to fair competition.

Ultimately, greater access to market encourages fair competition that ultimately translates to benefits for businesses. Expanded open skies agreements would also have the practical benefit of

helping to offset the cost of airport construction and privatization. More traffic rights mean more flights, which translate into greater revenue for the airport authorities.

We're pragmatic enough to realize that comprehensive liberalization of air transportation may take a bit of time to complete. In the meantime, I'd like to propose a stop gap initiative. We'd like to propose a separate air agreement covering air cargo services, zeroing in on movement of product, and then deal with the movement of people as a separate situation.

The U.S. government has considered the separate liberalization of air cargo services on several occasions. And it fits nicely within the European Trade Commissioner, Surly Onbritton's, proposals to the World Trade Organization.

We call on all interested parties to actively pursue the liberalization of air cargo services at the global or international level and to include it in GATT's 2000 intergovernmental negotiations. It's an effective first step. We began to see the free flow of goods and the enhancement of competition and productivity around the world.

Let me suggest to you because I was asked to — as part of the assignment, it said, "What are some of the regulatory or impediments or opportunities that exist currently that have an awful lot to do about where we're going tomorrow?" One of them, liberalization of air movement. The second one has to do with Customs.

An illustration that comes to mind for me is simply this: Out where I live in Maryland, there's a stretch of highway that has a speed limit of 55 miles an hour. And, for quite a while, those of us who live out in that area have been zooming along at 55 miles an hour. And then they decided that some of those cross streets weren't getting enough access. So they threw out some stoplights.

A couple of those stoplights are only about two blocks away from each other. So what you have is a highly efficient, very quick movement of traffic for two blocks at 55 and then slamming on the brakes because there's a stoplight. That's what I'm reminded of as I drive that stretch.

Maybe we can liberalize the movement of goods in the air. Then, all of a sudden, when we get to the borders, all of that stops and we sit for days with some of our product.

If efficiency comes from the quick movement of goods around the world, then there also must be a streamlining, a modernization of the way in which we deal with product as it comes to our borders, to the borders of other nations around the world.

We believe that there needs to be a redesign of current processes and establishing of the common Customs standards that would have to eliminate these unnecessary restrictions.

This — and I know you know this already. This is even more critical when we consider the evolution of electronic commerce. The advent of the information age has fundamentally changed the matter in which business is transacted around the globe.

Distances and time have been rendered almost irrelevant. Within a decade, it has as many as one billion people. One billion people will have access to and will be using the Internet. How does that relate to the movement of goods, especially when it comes to Customs modernization?

One last thing as I'd like to just wrap it up is to address an issue called fairness in competition around the world. As the world changes — and this is the view of the express industry — we are finding simply this. As postal entities around the world begin more and more to move

from their call of monopoly into the commercial area, the cross-subsidization from monopoly into competitive areas is in actuality causing a decrease of the free flow of competition.

Now, obviously we have an awful lot to do with that because we feel that impact directly. But I would suggest to you that flows very quickly into the productivity of nations and of regions around the world.

So the question simply is this: As we sit here, obviously by sitting here we are saying something. We're proactive. We know something can be done. The question is: What is that? What is the end in mind? That's why we're here: to seek to understand, to be able to forge from a very dependent type of world system that moves to independence.

But I would suggest to you this is the end in mind. The end in mind in global transportation, the end in mind in global markets, and the end in mind in global economy is interdependence. And interdependence only comes from strong, independent units dedicated to working together in interdependence.

UPS has committed to be a part of the solution, not part of the problem. So we're glad to be part of this conference. And if there's any way individually or as a company that we can be more a part of that solution, please let us know.

In the meantime, if you haven't shipped your Christmas packages yet, think of UPS.

Thank you very much.

SESSION MODERATOR CALDWELL: Thank you, Ken, for linking together the concepts of congestion, system reliability, and productivity.

Our final speaker today is a gentleman who was introduced earlier from STC in Mexico City, Jose San Martin Romero. Jose has a strong academic background. He also has a great deal of experience in plant operations and port operations and management and in binational cooperation most recently with the joint working committee between the United States and Mexico. He brings a unique set of skills and background to this event. And we're very glad that he can be with us today.

Logistics Requirements of Multinational Corporations in Mexico

MR. SAN MARTIN ROMERO: What I'm going to try to say this evening is divided into four major themes: first, try to set the first big picture or framework of how the world gross product in international trade has evolved; how the intermodal transport networks in logistics have followed this growth; then the role of transport in the global competitiveness and productivity, what's the role of transport; and, finally, try to give some comments about intermodalism and logistics in North America and Mexico.

To set the first big picture, actually, the world gross product is around \$34 trillion. It has grown from \$22 trillion in 1990 up to this new figure.

From this world gross product, almost or more than 80 percent is produced in only three big regions. Close to one-fourth, 25 percent, is produced in North America; more than 31 percent in Asia. The European Union produces around 20 percent. The rest of the world, where the majority of the people live, produces less than 20 percent.

In this world, international trade development has played a very important role. Nowadays, almost one-third of the wealth in the world has to do with international trade.

It has grown in 50 years since the end of the World War, where very little international commerce took place, where weapons were the ones that traveled all around. It has grown 1,800 times, going from \$6 billion up to \$10 trillion, and in the last 10 years it has gone up from \$4 trillion up to \$10 trillion. Whereas the world's gross product has grown 50 percent, international trade has grown by 150 percent.

What has made this happen? Globalization has helped this growth.

Within the global economy, we can broadly speak about five big areas, four, perhaps five big areas of globalization, globalization of the production through business, entrepreneurial logistics, the world industry.

Globalization of trade achieved through commercial logistics is one item like financial globalization, electronic money. That doesn't produce a big deal of wealth only to a few ones and another way has provided or helped to provoke a lot of financial crisis of several countries, among them Mexico, Russia. Even Japan hasn't escaped this globalization.

A fourth area would be the globalization of communications, the communication Internet information systems. That has helped the development of the rest of the globalization areas.

And, finally, one that perhaps will happen — and it's even more complex than the other ones — will be the globalization, cultural globalization, for this and called the global village. But that's another thing. What we're interested in is globalization of production and trade where logistics play a major role.

As an example of production and trade globalization, again, developed mainly by private industries, the transnational and multinational corporations, what average of this process is achieved in the 50 percent through the TNC's affiliates stature around the world depending on their comparative advantages?

Other industries, mainly medium and small industries, supply 30 percent of the process. And the final assembly takes place in 10 percent of the sites.

As we learned in the morning, almost 60 percent of the production is processed versus inventories. And now this has been achieved through logistics and transportation.

To add a little bit of complexity to this picture, nowadays we have to interconnect every day more and more regions and countries. Fifty years ago there were 50 countries registered in the

United Nations. Today we have 185 that in some manner must be interconnected if they don't want to stay behind in their development.

What have the main systems evolved? Well, as I mentioned in the first diagram, three regions comprise up to 80 percent of the world gross product and, therefore, have about 75 percent of the world commerce.

Among these three regions, between probably 30 and 60 with the most efficient distribution systems have been developed where the supply management techniques have been applied and where the most sophisticated intermodal systems are now running.

How is this system that comprises the supply management chain, the inventory control, manufacturing process, and finished goods production? It has two flaws: one physical flow and information and proceedings flow.

Basically, as we have seen — and I am not going into that — we have the first supply activity, raw materials parts, intermediate goods, but go to where transport supply chain to a supply inventory.

Again, the key factor or one of the key factors is reducing the first inventory of supplies within the manufacturing process or assembly process. It's also several connections done by transport.

Then again we have the objective of trying to minimize the inventory of finished products that again go through a transport chain to a final distribution to consumer.

At the same time, in parallel or even before, we have to achieve all what's the information flow procedures and proceedings flow, Customs, legal, papers, where I think the government can play a major role. Private industry takes care of all of this. Government could play an important role in this matter.

It's like that how transportation has become an integral element of the production logistics is based every time more and more in the just-in-time concept trying to achieve zero inventory or get as close as possible. Finally, modes of transport are seen more and more as more mobile inventory against having fixed inventories.

On the transport side, how is this appearing in the world so that we talk more and more the appearance and the compression of mega carriers, mega ports, and mega ships? This is how the picture looks.

We have the appearance of big mega ports that are comparative in a sense global hubs. They receive mega ships from up to 7,000 TEUs nowadays. They in itself conform logistic platform to organize the whole logistic chain through their intermodal centers, connecting with different land bridges depending on the region, double stack, piggybacks, railroaders in North America, shuttle train, and barges; in Europe, intelligent highways within North America, for example, but comprised the land just-in-time bridges up to the final distribution.

But at the same time as we heard this morning, there are ports that remain as big ports in our comparative sense in regional hubs that either serve their regional areas through also their inland links and also feed and connect with the mega ports to concentrate economies of scale and also frequencies of minor quantities.

And, finally, we have the feeder hubs or local ports that either feed the rest of the big logistic platforms and also serve the local regions through their inland links.

A picture of this network, of the global port network and its intermodal systems, is looking more and more like this, where we have the big ports connecting with several other sources of

supply of products and goods serving through their land corridors, the major regions, and all the other ports also acting within their area of influence.

Who are again building all of these corridors and networks? The private industries, the big mega transport strategic alliances about developing these chains with the help or without the help of governments.

We have as examples the Global Alliance, Grand Alliance, Unique Global Alliance, Pacific Alliance, all of them led mainly by the big ship companies with their inland partners, trains, and tracks.

Other ones would be Worldwide Alliance, Christian Consortium, Maersk-Sea-Land Joint Venture. The Mexican Shipping Line also has gone into a global alliance. Another one would be New Global Alliance.

To have an idea of what is the movement these big mega modalists are transporting, between the three major blocks, we have that, between NAFTA, Japan, Asia, and the NICs, more than around 8.1 million TEUs are being transported, between Japan and Europe 5.7 million TEUs, and between NAFTA and Europe up to 3 million TEUs.

Making an analogy and going now to our region, North America, Canada, United States, and Mexico, a similar thing is developing, although to a lesser pace, a smaller pace. That's how our main ports of entry are trying to come by themselves in these global hubs, providing logistic services.

The last roundtable we had several actions that are taking place in the infrastructure operation, institutional, regulatory areas to try to achieve this. This connects our three countries within NAFTA and through several systems, rail, double stacking rail, intelligent highways. And from there, we are connected to the rest of the world.

The other, we are talking now in the Mexican border of around five of these main ports of entry. They are all the complementary POVs that are converting themselves in regional hubs that serve the state transport, mainly the state transport corridors between borders, states; and, finally, local POVs that serve the counties and the local transport corridors.

This is also within North America, although slightly different within this diagram. The logistics productivity has increased and is directly linked to the decline of inflation and competitiveness.

And we saw this first diagram how this is exclusively from United States The logistics costs were increasing before deregulation, deregulation and free trade, free contracting, free pricing started.

The costs went down from almost 17 percent down to 10.2 percent and the last years is rising a bit, which worries a lot the entrepreneurs and also the carriers. But that inflation went down with logistic costs. We are talking a cost of \$862 billion that would have stayed at the same levels, would have been \$1.4 trillion. So they are around \$6 billion in logistics costs.

Mexico also has a very high cost in logistics. Transport inventory and communication has a share of 13.2 of GDP. Compared with other sectors, it's the second highest after energy and water.

Within our international commerce, it's taken place where we have to develop our most important international corridors at the following. Last year we had a \$220 billion international trade figure. Eighty-two percent of that takes place with North America, 80 percent United States, 2 percent Canada. That's \$180 billion, 6.6 with Europe, 6.3 with Asia, and 4.4 with Latin America.

How has that evolved? And I am almost finished. When we used to be a very work-oriented country, we had a very small international trade figure, \$39 billion. Already 70 percent was with America, 15 percent with Europe, 7.4 with Asia. It has increased almost five times up to last year, to

\$220. And also our trade with North America has increased from 70 percent up to 82 percent. And with Europe, we have reduced participation 15 to 6.

Finally, we are working on developing our networks to try to build more efficient international trade corridors. Our main highway system that connects the main maritime ports, the main ports of entry, and the main centers of production and consumption together with the different connecting points, intermodal terminals, way ports, continued terminals of the maritime ports.

And, finally, also our railway system recently privatized in three regions: a joint venture in the Northeast region with Kansas City Rail, Pacific North with UP. And this is a big question of how this will work.

With this, I finish my presentation. And I thank you for your attention.

SESSION MODERATOR CALDWELL: Thank you, Jose. And thank you to all of our speakers.

We do have a few minutes left for questions.

PARTICIPANT: A question for the last speaker. With respect to barge freight between Mexico and its world trade partners, you mentioned that trade increased from \$39 billion in 1980 to \$220 billion in 1997.

Could you tell me, if you know, what share of that was petroleum products and if the movement of petroleum products lends itself logistically since it's moving by tankard and it's not defined to exit; i.e., the railway?

MR. SAN MARTIN ROMERO: Yes. As you know, by 1980 in Mexico, we were one of the most closed countries in the world based on our domestic market. So all of our transport evolved around our inner market.

At that time, all of our international trade comprehended around 75 percent of our exports. In the mid '80s, we started opening and became one of the most out work-oriented countries in the world, I would say, in a very short period.

Our exports have been diversifying more and more since then. Nowadays, petroleum counts and with the prices going down around no more than 7 percent of our whole exports.

Now, PEMEX, the steel national oil company, they manage and administrate all of their logistics. They basically have their own ports. They use partly their own ships. They also contract several ships. And most of it moves by sea.

For the domestic market, PEMEX has a big pipeline, a big pipeline network for the domestic distribution. And only fuel goes by track, pipes. I don't know if that answers your question.

[QUESTION INAUDIBLE]

MR. SAN MARTIN ROMERO: Well, as you could notice in the different compressions, the participation has increased in all the other regions in favor of North America. But the nominal numbers have increased in Latin America twice, with Europe also twice, and with Asia more than twice, although the participation is smaller. Maybe we see very quickly the picture if I can find it. It will make it more clear.

So Latin America went from \$2.2 billion up to \$10 billion, although within the huge amount of trade, the participation reduces; the same for Europe, went from \$6.2 up to \$14 billion.

PARTICIPANT: I was just going to ask Mr. Churchill if he could provide some insights as to his impressions of improvements in logistics. We've heard a lot today about the efforts on the

parts of governmental or international organizations to improving logistics in terms of studies and reports that have been generated.

But where you see the rubber meeting the road, have you seen your company's efforts? Are there improvements in the way modernization has been?

MR. CHURCHILL: I think it's fair to say that this is all something that's evolving and we're all learning from. And this is why this kind of a dialogue is so important.

When we start moving outside of our own spheres and finding connectivity, I guess the key word is "connectivity." Sometimes we have enhanced it within our own little portion of the world but where governments help us — and I think if I go back to the three points that I made where we see growth and change occurring but more needs to occur — has to do with airline liberalization. It has to do with an updating, a modernization of Customs.

I would highly say that that has moved but has got quite a ways to go because it is not uniform. And we need to see more and more of that occurring.

And releasing of all of this comes down to — I hate to use the word. It almost comes down to trust somewhere along the line, too, where we have to get to that point. There's disconnect and de minimis values. We need to have some uniformity.

Companies that are global need to have that uniformity across. So I guess the answer in short — it took a long time to say it. There's movement, yes, but there's, oh, yet, so far to go.

Thank you again to our panel members.

MODERATOR SCHACKNIES: Thank you very much.

There are many experts around in the audience here. And we recognize that all of you contribute significantly to this whole process. We invite you to participate in this event, which is going to last for a few more years, as you have heard. And we want both your verbal as well as your written statements and contributions to the proceedings as well as the subsequent events. So let's keep the dialogue going.

You have all of our names, phone numbers, e-mail addresses. And we hope to continue this process. So for today, the official part is over. Let's start with the reception. Good night.

OECD Trilog Plenary Symposium

Public Policy Issues in Global Freight Logistics

* * *

Day 2

December 18, 1998

Welcome

MR. SCHACKNIES: Good morning, ladies and gentlemen, friends, enthusiasts of global logistics. Welcome to the second day of the fifth Plenary Symposium on Global Freight Logistics.

I understand a few more people are going to be dribbling in, hopefully, over the course of the day. We had a terrific turnout yesterday. We had about 150 people registering for the program, but some issues seem to be more interesting to our participants than others.

I'm hoping that by the end of the day we will end with a crescendo of enthusiasm, and a commitment to all sorts of follow-up actions, as the OECD expects of us.

We will hear, later on in the afternoon, what the next steps are going to be. We all expect that you, as moderators, panelists, and participants, see yourself officially as members of the North American Taskforce on Global Logistics, and you will contribute to — not only to the preparation of the final report, in subsequent plenary sessions, but also, hopefully, to the implementation of whatever issues we all agree upon.

I'm still waiting for a few more people to dribble through the doors before I turn over the floor to Rich Biter. Perhaps I ought to do that now. Rich, the floor is yours. Perhaps you can start by introducing yourself and the important function of the Office of Intermodalism. Thank you.

Improving the Efficiency of Intermodal Transport and Global Logistics

MR. BITER: Thank you, Bert. Good morning, everyone. My name is Richard Biter. I'm the Deputy Director of the Office of Intermodalism with the Secretary's Office of the United States Department of Transportation. We look forward to a lively panel discussion this morning.

We have some expert people that we have been able to put together to address way that we can improve the efficiency of intermodal transport and global logistics.

I wanted to make a few remarks about improving logistics, and how we go about improving intermodalism. I think there is a common theme that we must all keep in mind, and that comes down to change.

It is just not a one-time tweaking of the system that we look at when we talk about improvement; but rather it is a continuing process, as we look at intermodalism itself, as a process, we need to look at changes of process.

In the past several decades, intermodal transportation has become a keystone for sustainable economic growth of the world's leading economies. In addition, it offers opportunity for rapid economic growth to those economies that are still trying to pull together and also for those economies that have recently suffered through economic setbacks.

Intermodalism, proper infrastructure investment, makes sense. It also provides a vehicle so, when the economies do turn around, they will be in a position to take advantage with a good intermodal infrastructure.

Several examples of how changing, when we look at efficiency, and how efficiency affects intermodalism, is back what we experienced in the United States, back in the '70s, and prior; where we had a great debate about deregulation and the role of government in transportation. At that time, the railroads were in dire economic conditions, as well as some in the trucking industry.

And the debate that came over, at that point was, what if we take government out of the regulatory business, and leave regulation more or less to self-regulation; that is, market forces.

And that is pretty much what happened beginning in 1980 with some major legislative changes that had taken place. And there was a lot of profound hurt, in some cases. A number of railroads had gone bankrupt, a number of trucking companies had gone bankrupt.

But overall the industry not only survived, it actually thrived. The rise of intermodalism since the 1980s is a prime example of improvement in efficiency, by taking government out of the regulatory picture.

Our guests today are going to be speaking in various forms about how improving the efficiency of transportation will have a tremendous effect on the improvements to the system.

I'd like to start off today with Ted Prince, who will be speaking to us regarding policy issues and improving the efficiency of intermodal transportation.

Ted comes from a wide and varied background in transportation, both in rail and in maritime, and is nationally and internationally known as a consultant. He is also currently a columnist with the *Journal of Commerce*.

MR. PRINCE: Thank you, Richard.

We are going to talk about the policy issues affecting intermodal, and how we can achieve greater efficiencies. Just as a starting point, we should just frame logistics, because this has become one of those words with a lot of different meanings, and I think it is constantly changing.

Today logistics has been sort of a code word for customers to kind of beat down the rates with their carriers, accompanied by some of the regulatory changes Richard mentioned, and to reduce inventory. That was probably the most glaring example of what just-in-time, and the entry of logistics meant.

Tomorrow, in the future, it is a lot more sophisticated. It is a demand-led process, coming from the customer side, and not really coming from the carrier side.

Customers are looking at time-definite delivery. That means they need the merchandise at this place, at this time, very often in smaller shipments. So the whole idea of trailer load and container load is giving way to less than trailer, what they are referring to, the consultants today, partial to pallet-sized loads, more frequent delivery, and shorter supply chains.

And we can talk about supply chains for a long time. But I think it is interesting that when the *Harvard Business Review* starts writing articles about supply chains, the CEOs and chief operating officers are reading this and saying, yes, I need one of those too, and better go out and get one.

So the whole concept of how the interaction between sourcing to manufacturing and distribution is changing. And the whole world is changing in that way. Before it was a focus on transportation: which carriers am I using, which modes am I using, much more specific definition of how that whole function is led.

And there was a local optimization; people were looking at it saying, just inbound, or just outbound, or this shipment, or this piece.

And tomorrow, as we evolve into the supply chain world, is global optimization. I'm not interested in optimizing a bunch of insular individually. I need to optimize the overall solution.

That means that the mode selection is blind, and so is the carrier, as you move to third party, and fourth party logistics, the customer is really not caring about how or who is carrying it, but what and when. So that is a fairly significant change, and it is going to impact intermodal.

Now, to give you an example of what this means, let's look at the transit time of a container of goods from Hong Kong to New York. Twenty-five years ago it was about a 50-day transit time, it was all water, they would call and direct ports in Asia, moving on to the West Coast, through the Panama Canal, and into New York.

And over the next 25 years the great bulk merchandise was replaced by containers, all water service was replaced by intermodal service over the West Coast, unit trains rather than just general freight trains moving to expedite cargo across the United States, and direct sailing meaning it would go from Hong Kong directly to the West Coast, without calling in other ports, such as Taiwan and Japan.

And now the standard from Hong Kong to New York is 17 days. That is a two-thirds reduction in 25 years, and people are looking at other ways.

But this is an intermodal solution to requirement, as the value of the goods increased, as the demand for the goods increased, of putting together rail, truck, water movement to accomplish what the customers required.

To just talk a minute about intermodal, everybody seems to be a lot more familiar with intermodal, but the mechanics of intermodal are still unclear. People are not quite sure how these various pieces get put together to a through movement.

And ironically there are still a lot of barriers to entry of people getting into the market to compete. A new vessel costs \$100 million. The free market has to have the ability to both enter and exit a market, and in many cases that is lacking.

There is a lot of common wisdom out there, but a lot of it is flawed because the industry is changing very rapidly, and what was the case 5 or 10 years ago is no longer the case today.

Intermodal, by its very nature puts together various modes and various vendors. And that results in a lot of transaction costs. People are billing each other, people are checking on each other, and there is a lot of uncertainty in the transactions. That causes costs, and it makes the seamless exchange, much like the baton pass in a relay race, very difficult.

You've got a very complex chain of participants. People may be working together and also competing against each other. So it is a fairly rugged market out there, and it is constantly changing with new technology and new participants entering and leaving.

As a result, as you try to optimize this network of transportation providing logistics to customers it is very complex. Very often you will solve one problem and create two more.

This gets to the heart of local versus global optimization. There is a lot of decision making that is pretty much wishful in nature.

So they are saying, I'm going to make this decision, and I hope it is right, and I'm going to ignore what the market is doing, going to ignore what my competitors are doing, going to forget about what my customers are saying, I'm going to do it anyway.

And there are a lot of unintended results, and a lot of times people will think it is improving, but they are really just ignoring the problems. Intermodal is about 50 years old, really, in this country in terms of rail, truck, marine, and we are still trying to solve some of the original problems. They just keep occurring, and occurring, and occurring. So we are going to talk about two areas: we are going to talk about efficiency, and we are going to talk about obstacles.

The efficiency I really see in three general areas. The liner network design, how vessel operators, specifically container vessel operators, design their network and provide transportation services within it; the marine terminal basis, the trade-off, the point of interchange between marine, and either truck or rail, how does that affect us; and what about the intermodal infrastructure, which is a very big issue in this country right now.

Let's talk about the network design. One of the issues is that global sourcing is constantly changing. I've done some work for a major retailer whose market is people who cannot afford Wal-Mart. As a result, producing soft goods, garments in China, is now prohibitively expensive. They've moved their sourcing to Cambodia. Now you have to find a way of getting those goods from Cambodia into the southeastern United States. And that is competition. That is what the market is about.

We have to find ways, and the liner networks have to find ways of serving all these points, as the locus for production constantly shifts. Now, the problem is that it is still a business that is inherently nationalistic. You have national flag carriers, and in many cases they are protecting their own market, and in other cases they are prohibited from doing things in other markets.

Currently the United States and PRC are having a lot of discussions, in both countries, about what that means for their national flag carriers.

The trend is for steamship lines to be moving to larger and larger vessels, 2,000, 3,000, 4,000, 5,000, now 6,000, almost 7,000; they are talking about a 15,000 TEU, 20-foot equivalent vessel. It is theoretically possible, the engineers tell us.

That means you are moving to fewer port calls, which means you are going to have to distribute and collect in a sort of a hub and spoke system, all of the cargo to gather into discharge for these larger vessels.

You have a problem, then, of where do you deploy these vessels? Do you deploy them into major population centers, such as New York and Los Angeles, which have the local population that correlate to demand; or do you move them to more intermodal friendly places, that have the land, that have the facilities, and have a cheaper and better service to serve the hinterlands?

Maerske Sea-Land, right now, we are looking for a major port on the East Coast, and you start to see that debate between two of the finalists, New York, and Baltimore, and Halifax. New York has the population; Baltimore and Halifax have the intermodal connection and the ability to provide more land.

And you are seeing these shifting alliances, where lines are getting together, because of these larger vessels, and that requires that today I'm allied with you, tomorrow I'm allied with somebody else.

That means that all of that infrastructure to support all of those vessels is constantly changing. That is a very big problem for the marine terminals.

There are a lot of issues in this country on marine terminals. What I call a modal design basis, which is that marine terminals are built by people who are familiar with the maritime industry, and have very little experience with surface transportation, very little with truck, and practically none with rail.

And they attempt to provide what works in a marine terminal, to make it part of the rail terminal, with on-dock rail being a part of that, and the results are pretty disastrous.

Two of the most recent terminals that have opened in the United States at a cost of probably close to a million dollars were obsolete the day they opened, they couldn't handle the volume, couldn't handle the operation, lots of problems, more than start-up.

And that is the problem, because the economic life of the terminals is much shorter than their physical life. A terminal can last 30 or 40 years, but the conditions and the business that you built for three years ago has completely changed.

One of the big differences between the United States and other parts of the world is here every steamship line has to have its own terminal, whereas the common user terminal is much more common in Asia and Europe, and as a result the productivity that they get per acre of through-put is about 10 times higher than what we have in the United States.

But we are Americans, we have the money, we have the land, we can waste it, there is no problem.

Unfortunately the whole economic food chain of the maritime industry is changing, and these terminals are usually part of vertical integration. Steamship lines own the terminals, vertically they have them throughout the world, horizontally.

Rich was referring, earlier, to the changes in deregulation. And one of the things you saw from airlines and railroads, is they got rid of their terminals. They couldn't operate them effectively because of labor restrictions, and they didn't have the right management.

So this is a major issue, and it is a very significant public policy issue, because there are billions of dollars of public debt that were issued to finance these projects, and it is not inconceivable that in the future, as the shipping industry contracts, and there is exit, that some of these bonds may start to default.

And that is going to be the impact of the free market that comes from deregulation.

The last issue is the issue of intermodal capacity. One of the problems is that intermodal by definition, like most transportation, has a very definite peak. And there is a saying that they use here, when you talk to people like the railroads and airlines, they will say, we are not going to build the church for Easter Sunday, we are not going to build for the peak demand; it is not economically effective to invest capital that is used, at best, only 10 percent of the time.

Unfortunately, as the transportation changes, and the needs grow, what was the peak two years ago, is the base demand today. So if you weren't investing for yesterday's peak, you are not going to be able to handle the base load today, and certainly not the peak load today.

In the rail intermodal business, they are constantly playing catch-up on terminals, same thing with the marine. What was designed is obsolete; it doesn't have enough capacity by the time it opens.

The issue of intermodal connectors is very important. How do I get from the rail to truck, how do I get from the marine terminal to rail, and/or truck?

It has been an issue that the government has paid a lot of attention to. It is nice that you have a highway or a rail line, but if you can't get the freight on and off, the whole mobility of the system suffers.

In the marine business the question of whether we load on-dock, off-dock, or near-dock is a big question. And the basic theme here is, How do I optimize the connectors between the systems? Do I want to aggregate my volume and load from, say, Los Angeles to Chicago, or do I want to disaggregate it, which is more effective to load it from Los Angeles to Columbus and Pittsburgh, and all of those different points?

And this is a problem because the more points you are loading to, the more difficult it is to accommodate that, the more capacity and the more capital you need.

So as the market keeps changing, and the customer requirements keep changing, the infrastructure has a lot of problems, which then causes uncertainty, which raises questions about how it will be funded.

I will talk now about the barriers to trade. Three issues, I think, impact global efficiency, and they are the issue of regulatory oversight, cabotage, and equipment.

Regulatory oversight, in effect, is rationing capacity. You have a lot of problems because when that vessel arrives, for instance, using the marine example, you have to clear Customs. And you can either clear it there, or you can move it inland, which would be best to get it out of the marine terminal as quickly as possible.

The problem is everyone is familiar with Customs, but if you are a container operator in Southern California, you have five or six different regulatory agencies that can hold a container. It can be the Drug Enforcement, it could be Immigration, it could be the Department of Agriculture, it could be California and local authorities.

The problem is that all of these different holds can require the line to hold it, but the means of communicating aren't very effective. Customs, which is the most recognized, and their problems have become very well publicized, through the computer problems, but at least you can get it electronically. Everything else is fax, maybe e-mail.

And you are trying to figure out, if 6,000 containers are moving, which ones can be held, or have to be held, and which ones can be moved inland. You have quota uncertainties on garments. Once a quota is filled on a certain item, there is no more traffic allowed on that commodity until the beginning of the next year.

So you might have certain garments of China that you want to move inland, but because of the quota you are going to hold them in Los Angeles and clear them, because in the four days of movement from Los Angeles to the inland point, the quota could be filled.

So there is a lot of uncertainty that importers of garments, especially, are constantly dealing with. And that requires you to tell the line, move it, hold, move it, hold it, no, move it here.

And all of these things have to be communicated from the line, to the terminal operator, to the port, to the railroad, and it seems, you know, it is fairly complicated, even though it is a very basic transaction.

Within North America you hear a lot of talk about NAFTA, but moving cargo between the United States and either Mexico or Canada, there is a lot of trans-border uncertainty. There are huge delays at the border. It can take you 10 minutes to get across; it can take you three days.

And again, all of these uncertainties are anathema to the customer who is looking for that time-definite delivery. You don't want to build the transit time to accommodate all the possible uncertainties, because that makes it uncompetitive.

And even within the country, very often, between state, federal, and local authorities, cooperation is limited, and these transportation carriers are trying to figure out, What can I move, and when can I move it?

Cabotage is another efficiency problem. It refers to moving cargo within a country by a carrier really not of that country. It prevents efficient repositioning of equipment. There are always going to be demand centers and supply centers, and carriers are looking to move empty equipment from the demand to the supply location. That raises expense, it reduces efficiency.

And as a result it stifles competition, which is what all government policy, right now, is currently alleging to support.

I will give you an example. When I worked for the railroad in the '80s, double stacked transportation was just in its infancy in 1984 and 1985. At that time U.S. Lines was still a viable carrier, and they offered intercoastal service, say from Los Angeles to New York, by all water.

And, believe it or not, the railroads had doubts about the double stack product, and they were afraid of U.S. Lines. This was all water product competing with rail and highway. Only U.S. Lines could provide that, because they were U.S. flag with a U.S. built bottom. This is the Jones Act of the United States, which prohibits intercoastal cargo by anyone other than U.S. carriers. And there are all kinds of arguments about what that costs or doesn't cost.

But if you prohibit this, you know, you are increasing the cost to everybody, and passing those on to the consumer. It impacts port locations. As you move to fewer vessels, there is a fear in the United States that, because of the Jones Act, these larger carriers will go to a port such as Freeport, and then Feedearth, which is not in the United States, from Freeport to ports on the East Coast of the United States and South America.

That is because of a cabotage restriction instead of a point such as Miami or another major port location.

The final issue is equipment. And Richard and I were talking about a conference we were at last year, where the issue of equipment standardization was a major issue.

First containers were 35 feet, because that is what truck trailers were, and they eventually moved to the 20 and 40 foot standard. But now you've seen 45s, 48s, 53s. In Europe, the swapped bodies are different sizes, and there is a lot of efficiency that could come from a standard, single size.

But the customers have different requirements, and different requirements lead to different sizes. So I think we are going to have to find a way to accommodate different sizes.

The problem is that very often you get into the issue of safety. About six or seven years ago when the Highway Bill was up, which became ISTEA, and the motor carriers were working for longer combination vehicles, it was in effect a debate on economics that was shrouded with the safety issue.

The railroads talked about killer trucks on the highways, and the truckers talked about problems with the railroads.

But the economics are such that we have to find a way for international trade not to be barred. There is a problem, right now, in the shipping industry, in that the standard size for most imported consumer goods is a 45-foot marine container. But, in Europe, the limit is intended to be 13.6 meters for the limit of what can go out in the highways, and that is about one inch. A 45-foot container, by one inch, is barred from moving inland in Europe when these regulations eventually take effect.

There is millions of dollars of investment. It is good everywhere in Asia, at least in the ports, that constantly move throughout the United States. So how are you going to have international trade, when the basic unit that is favored by customers can't be utilized?

And this is just one example. There are all sorts of other ones when you deal with the roadability. How are you going to make the trucks, and the chassis, and the containers safe to move out there, so that you have efficiency, but you are still protecting the public good?

And that is a big issue in this country, because as you have intermodal, one person owns the container, a different person owns the chassis, someone else provides the tractor, someone else may be providing the driver. You put all these pieces together, but how do you have a safe product that is still cost-effective?

And the other issue that is a regulatory issue is theft. The theft of marine containers in this country is a very dark secret, as it is elsewhere in the world. You either have pilferage within, where part of the container is taken, or actually just outright hijacking, where they will drive out with a container of a half a million dollars of consumer product.

The problem is that in most of these areas where there are theft problems, there are much more severe problems, so that this is a very low priority of the police and other public safety entities.

But, again, this affects reliability, it affects profitability, it affects the whole chain. And then you have to air freight replacement in. It is very difficult.

And this is, perhaps you know, a societal issue. But the issue of theft is continuing to grow, and as you get the smaller shipments, with more frequent deliveries, and time-definite deliveries, theft becomes an even greater problem.

Really, to focus on this for a final thought, when we talk about the efficiency and the barriers, I'm suggesting really that we ignore the hardware of all of the things that attract our interest.

We have to specify the performance, not the design. This is what I want, when I want it. I don't care who carries it, I don't care what mode is used, it has to be time definite, and cost competitive, and that means you are focusing on the customer requirements.

And if I would say that there is one difference that I've noticed in my talks between the United States and Europe, is that Europe is much more advanced of the United States in terms of accepting the environmental benefits of intermodal, in terms of capacity, in emissions, and what have you.

But they can't quite get it together in terms of who the customer is, because of all the different entities, whereas the United States is more focused on the customer issues, and the environmental problems seem to get shifted aside.

But if we focus on what the customer wants, we will have a package that is efficient, and can provide the global transportation that the global economy is going to continue to need.

Thank you.

MR. BITER: Thank you, Ted. There are parts of the world where people really do live in containers.

Next we will hear from Mark Juhel, who is a port specialist with the World Bank. He has been with the World Bank, I believe, since 1992, and has a very wide experience that he would like to share with us on addressing port issues.

MR. JUHEL: Thank you, and good morning again everybody.

I will give you a car story for a start. That is a story of this speaker who just walks out from the stage, and he is greeted by one of his colleagues telling him, you really were like a Rolls Royce today. That seemed like kind of congratulation, but the guy asked what do you mean by that? Well, you know, I could barely hear you, and it looked like it would last forever. So I hope I will suggest some more casual comparison today.

Actually, just before turning to the issue of land transport interface, I just would like to come back for a minute on one topic, which was raised yesterday with Ken Gwilliam, about the role of organized labor when looking into reform and getting more efficiency in transport.

I believe organized labor is not only an issue and a partner at a national level, but very much more and more at the international level, as well, with the ITF, the International Transport Federation, taking a more and more active stance toward reform program in transport, and particularly in ports, as in other modes.

And, actually, I have been to share the floor, a couple of times already, in international conferences, with the ITF official for dock workers, and we tried to find some common ground.

The interesting thing, I believe, at least on the port side, as the official's picture of the ITF is to say, we know that port reform is unavoidable; however, we want it to be fair toward the workers and to be socially acceptable.

But there is, I believe, some will and some intent toward the international level of the ITF, to try to train the local unions, to some extent, to deal with this process in order to find some acceptable solutions.

Anyway, the ITF definitely becomes a partner that cannot be overlooked in this process.

This afternoon you will hear my colleague, Lou Thompson, talk about railways. He may share with you some less optimistic thoughts about ITF cooperation. But after all, that is what he is.

So let's turn to this issue of maritime and land transport interface. A quick historical prospective. Actually, ports, of course, when they were first set up were just meant to be a physical interface between sea transport and land transport, and there was a focus point around which cities, big cities, began to grow.

And when the city grew, of course, they began by themselves to limit the expansion of the ports, and then developed this kind of conflict between city development and port development, and this conflict has a clear consequence of efficiency or logistics, when you have to move significant cargo flow through the ports, and through the city behind them, and to reach the hinterland.

So on top of that, of course, the development that we have been witnessing in sea transport during the last decade has meant that the requirements on ports are even more and more important in terms of size, in terms of depth.

And, of course, as a consequence on the land side of the transport, have also become much more difficult to handle. At the same time the efficiency of land transport, itself, to serve an increasing and usually more and more disputed hinterland has become critical to the port structure itself.

And it is clear that today the global logistics organization makes it quite mandatory for shippers world-wide to rely on seamless transport chains, seamless chains of which the ports are always a prominent node.

So it is quite clear that the smooth interaction between the port and the city around it, in terms of transport freight requirements, and good connections, and environmental protection and safety, appears a prerequisite for effective delivery of integrated logistic services.

In this respect a quick and safe access to port facilities from inland transport networks is definitely a basic requirement.

So do transient ports, shipping and logistics. In fact, we are all quite well aware that as the transport chain becomes more and more integrated, this user, the shipper, doesn't pay so much attention to what kind of links are actually put together to carry its cargo through. As the previous speaker just mentioned, that is the objective that counts, whatever the means are.

And so the transport operators, shipping lines, freight forwarders, will just try to find out the best possible combination.

Well, this brings additional burdens to ports and cities, and in order to handle this new duty in the most effective way, there is clearly a need for a kind of common management of this interface between the ports and the cities around them.

It is clear that these new trade patterns require quicker, cheaper, and safer transport of goods than in the past. And, clearly, one of the main obstacles to that is found at each transport mode interface, each interface causing delays, increasing costs of the whole transport chain. So what would be, actually, the public sector mandate in order to ensure that each partner can be given the opportunity to deliver the best possible services?

Well, that links up with the overall logistics concept we are dealing with. Here the amount of developed advanced logistic systems could be summarized by, first, understanding clearly the cost behavior of the entire logistic system, so that it can be incorporated into off-shore sourcing and manufacturing decision making.

Second, there is a clear need to promote a strong relationship between carriers and vendors, a relationship that will include quality certification procedures.

Third, designing a flexible transportation system that will allow for quick routing and mode selection changes is also a critical point.

And, finally, all these must be supported by an efficient and convenient information system that has to be integrated with manufacturing and purchasing processes.

This integration, actually, will directly link to what is, today, called intermodalism, or intermodalization, I'm not quite sure what the final word will be on that, clearly, but a much smoother and flexible combination of different modes than has been the case in the past.

And this should lead, in turn, to optimization of the logistic means, and into the blueprint we should see coming for what we used to call third generation ports.

Well, now I'm not that keen on generations, myself. I believe that ports today are evolving on a continuous basis, basically, to meet customer requirements, which are changing and evolving very quickly.

The concept just means, however, moving from a stage where the ports, where there is a physical interface, come into an age where they have to provide much more than just a place where cargo can be loaded or unloaded from ships. A place which, indeed, has to play a prominent and proactive role in the overall logistic process.

Ports and cities together have to cope mostly with access and space issues, in order to make sure that the logistic chain actually provides the services that are expected from it.

So in order to cope with this kind of new demand, sometimes ports face the situation where they just have to consider moving the facilities out of their existing physical context to a new place where they could actually provide better tailored facilities for their requirement of traffic.

Relocation of port facilities, of course, is a quite expensive proposition, and it cannot be implemented everywhere. However, in a number of places, already, we have been witnessing this

kind of evolution, especially in estuary ports, where other ports were just, typically, dropped into city centers, and more and more are moving toward the mouth of the river, trading sometimes the old facilities with the city, so that it could be a kind of win-win situation, where the city would benefit from this old infrastructure as a new urban asset, whereby the port authority would be able to raise some money to develop the new infrastructure facility downstream.

Then, space and access, I just said, why in particular because, as I just mentioned, the ports more and more today are an actor in providing additional services to the transport chain, which are usually named today as value added services.

And these value added services are a term of logistics that could be classified according to this distribution of activities, between general value added services, and value added logistics.

And all these activities, general logistic services which include, I would say, the classical additional services that are required to process the cargo, storage, loading, stripping, and so on, combine to the value added logistic with repacking, customizing, assembly, and so on. All these give the port, actually, a new role to play in order to help provide the basic facilities for these services to be delivered in an efficient way, and then provide an effective interface between the sea transport and the land transport part of the cargo carrying activities.

All these kind of developments have taken place, already, in a number of locations, and usually where they are all developed together. In Europe they have taken the name, sometimes, of district parks, and there are several of these facilities have already been in existence for some time, like in Rotterdam, in the Netherlands, in Wakefield, in the UK, in Verona, in Italy, or Bremen, in Germany.

Those are examples where district parks have been developed strongly, actually, by the port authority, at least, in the initial stages, usually a bit away from the port itself, because one characteristic of all these activities is that for most of them, at least, they don't need to be carried out strictly in the port ground. They can be, actually, delivered slightly further off from the port, meaning that it is possible to use cheaper land, at a place that will make it easier to implement efficient connections between this platform and the other land transport networks.

And this is, definitely, an evolution, which, I believe, will take place more and more. The port authorities withdrawing from operations, themselves, as you know, while implementing the land port concept, which now seems to have quite widespread recognition as being likely the most effective way to separate public functions from commercial operations.

Therefore, the new port authorities will, I believe, find another role in spearheading the development of these interface logistic facilities between the sea transport leg and the land transport leg.

And one thing, definitely, where they are more and more getting involved, is in developing these distribution centers, offering the basic facilities, allowing the private sector providers, shippers, transport operators, to come together and to optimize their operations in these areas of value added services.

Now, this has a clear consequence and additional burden on the public transport network. The main aspect of district parks, in fact, is that they have an average surface of some significance. These statistics are coming from European facilities, between 50 and 100 hectares, each company providing more, as 24, 25,000 square meters, from 20 to 200 companies operating in one single site, 25 employees per hectare.

Truck movements per day would be in the range of 3,000 to 4,000, which means that the concentration of movements definitely is a quite prominent element to take into account when

devising the land transportation network, which has to serve these facilities to connect it with the port, and to connect it with the other land transport networks.

That is definitely where a common approach between local and municipal authorities and the port authorities is critical in order to devise a physical system that will be able to meet these requirements, and to be totally reliable, from the point of view of traffic management.

The public sector mandate, I believe, is to facilitate, definitely, this coordination between the cities, the municipal authority, sometimes the regional authorities when speaking of regional transport planning, and the port to make sure that the planning keeps in mind all these different constraints that have to be accommodated from both the transport side, and the urban transport side, so that some kind of joint management between port cities and sometimes regional authorities can be developed.

It can actually be implemented in very practical ways. For instance, these district parks are being set up and developed by companies that can be subsidiaries of both support and the city, or the city becoming, and that is more and more the case, actually a shareholder of the port authority, or at least sitting as a port council, as a port authority, set up as a commercial company, so that there are official channels and permanent, formal arrangements to make sure that these kinds of issues can be dealt with on a simultaneous basis by the city management, regional, and port management.

As for financing support/technical assistance, who can do that? Well, of course, the World Bank can do that.

And, actually, we have been doing that already for some time, and in these two different kinds of actions, financing support, meaning that the Bank can help finance the basic infrastructure that is needed to start these kind of operations. We are doing that right now in Poland, in term of access to ports.

We have done it in Pakistan, we are now close to developing a network of inland container depot of ICDs in China, in order to basically make it possible for the private sector, later on, to come to operate these facilities, or just basically to be able to access support properly, and then to have this interface working.

I should have said, even before that, that there are physical examples not far from here, where we can see this kind of interface working just south of the Potomac in Virginia. The Port of Virginia Authority has set up, and has now been operating for a couple of years, an in-land container depot at Front Royal, with a train shuttling containers from Norfolk to Front Royal. That is an activity that has taken root and is now providing significant benefits to the port authority.

We have the same kind of facility in Sao Paolo, where the Sao Paolo dry port is operating with both Santos and Rio. In that case it is a fully private undertaking.

We just had required, actually, that the basic connections, road connections, are to be provided by the public authorities to make it possible for the dry port, actually, to be set up and developed.

Well, I believe that is all I wanted to touch upon today. Thank you very much.

MR. BITER: Thank you. The next topic we are going to hear about is North American truck size and weight issues. It is one topic where there is absolutely no debate at all. Right, Regina?

MS. McELROY: Right.

MR. BITER: Okay. As we heard yesterday from our luncheon speaker, Don Schneider, efficiencies and productivities, particularly in the trucking industry, can have a profound effect on the bottom line, both for the carrier and the customer.

Regina McElroy is the leader of the industry economic analysis team, Office of Policy for the Federal Highway Administration, and she will be speaking to us on North American truck size and weight issues.

And just as one final footnote, just on a personal basis, a lot of times when we talk about economic analysis, and truck size and weight, we get into bridge formulas and so forth. Some of us, at least me, at times get what I call eye glaze-over, because it gets into a very complex issue.

Regina has just one of those unique abilities where she can take complex issues and explain it to people like me that makes sense.

MS. McELROY: I've been asked to talk to you today about the truck size and weight issues in North America. I'm going to tell you about the analytical tools that we have developed under the truck size and weight study umbrella, and I'm also going to talk about the work that our country has been engaged in, under the NAFTA umbrella, along with Canada and Mexico.

And I'm delighted that Emile DiSanza is here today to help me out with any questions that you all might have on the LTSS work. And I will talk about what that stands for in just a moment.

As Rick said, truck size and weight is really boring, despite what I've got here which says major challenge. And that, I fear, is an understatement, to tell you the truth.

Truck size and weight within the United States, as well as on the entire North American continent, is characterized by an extraordinarily complex web of regulations.

In the United States we have all 50 states that are more or less doing their own thing, despite the fact that in this country we have federal regulations, or federal controls, that are placed on the interstate system, and other roads, to carry the bulk of the traffic in this country.

But despite that, the states are allowed to establish truck size and weight limits on roads under their own authority. And, also, we have something called grandfather provisions in this country, which means that some states are exempt from certain truck size and weight regulations, depending on what they were doing when a particular law or regulation went into effect.

In Canada there are 10 provinces and 2 territories, and they all have authority to establish their own truck size and weight regulations. And then there is something called an MOU, a memorandum of understanding, that essentially establishes limits that all of the provinces will agree to, except for vehicles going through their provinces.

In Mexico the federal government establishes all the truck size and weight regulations. I understand that the states are allowed to establish their own, but none of them has exercised that privilege to date.

Truck size and weight is an extremely complex issue. It impacts a whole wide range of areas, it impacts environmental quality, energy consumption, state, or really I should say, highway agency costs, such as those related to pavement and bridge impacts, highway geometric issues. So just an extraordinary range of issues.

If you looked at the Department of Transportation and all the various subdepartments that we have, I think that every single issue probably falls under the truck size and weight umbrella.

If that wasn't enough we also have diverse interest groups that are concerned with this issue, and they are very vocal, and they are very committed to their feelings on this issue.

What I want to do now is talk about the North American issue, and then I'll conclude this section and I'll move into what we are doing in the United States with our own truck size and weight study.

I'll talk first about NAFTA, the North American Free Trade Agreement, and then underneath NAFTA we have the Land Transportation Surface Subcontractor, LTSS. I will tell you what that is.

And then under LTSS there is still another layer, and there is a Working Group No. 2 that is included in that layer, and that working group is focused on looking at vehicle size and dimensions among the three countries, really harmonizing those dimensions.

NAFTA, then, is designed to establish an economic partnership, if you will, among the three trading countries in North America, and the idea was to forge a partnership among the countries, and then take that partnership and make it more competitive from the perspective of the global marketplace.

NAFTA recognizes that it is truly critical to have transportation systems that support efficient transportation, in terms of mobility, manufacturing, and distribution throughout the entire North American continent.

The Land Transportation Subcontractor was established to address transportation issues. And, really, what this committee is looking at is pursuing more compatible standards and regulations for rail and highway transportation.

Underneath this umbrella there are a number of working groups. But the one that we are interested in today looks at truck standards and regulations from a weight and dimension perspective. This group has been meeting for quite some time, and since '94, the first goal was basically information exchange. And that sounds like a pretty innocuous thing to say, but it is really not. There is no place you can go, even in the United States, and pull down some books from a shelf, and see what our truck size and weight regulations are all about. They are just so extraordinarily complex, and, frankly, subject to change and nuances in interpretation.

So it was important to sit down and try to get a common understanding among the countries, and we certainly improved even our own understanding of what was going on in the United States. A lot of work was done to codify, if you will, the various regulations.

The next step, which is also completed, was development of a side by side comparison. Canada was instrumental in doing that, a very nice publication.

And I think there were some copies of this publication out in front yesterday. And if they are not there today, and if anyone is interested in receiving one, just give Bert your card, and we will make sure that you get a copy. But it is a very nice short, concise overview of the regulations.

Right now the group is engaged in an assessment of stability and control performance standards. And looking at it, establishment of such standards would be a way to bring harmonization among the three countries.

I want to move on now to the U.S. comprehensive truck size and weight study. One of the things, let me say, that the LTSS Working Group No. 2 is kind of waiting on is this study, because what we've done under this study umbrella is to develop a whole set of analytical tools that can be used not only in this country, as our own Congress deliberates this issue, but also by other countries. And we hope that the LTSS group finds it useful as well.

I want to talk about the context that we are doing the study in, the goal of the study, give you a real broad overview of what we are doing with the study, and then talk about next steps.

In this country the last comprehensive study was done in 1964; the last DOT/OST study was done in 1982, a very long time ago.

We have had to make just tremendous efforts in moving up the state-of-the-art curve, if you will, on developing analytical techniques to evaluate the various impacts that I'll talk about in a moment. It has been a real challenge.

The reason that we are doing this study is that in that period of time, since the last study, there have been just extraordinary changes in the highway environment, as well as transportation practices.

In terms of the highway environment we see increased congestion. This is important not only in terms of travel time and user costs, but also system reliability, and we've heard something about that from the other panelists today.

Roadways are experiencing increased infrastructure damage. We also have a heightened safety awareness, by not only the government, by not only state governments, but also by the general public in this country. I'm sure in many of the other countries that you represent, the general public is just downright afraid, oftentimes, to be on the road with big trucks, and with lots of big trucks. So we have to be concerned with that.

Change in transportation practices is another thing that has been going on. If we look at global markets, we look at Canada and Mexico, and we see in terms of Canada, that there are 77 highway crossings between the United States and Canada, and 10 border states, and we have 14,000 trucks per day going across the border.

In Mexico, there are 38 highway crossings between the United States and Mexico, four border states, and 8,000 trucks a day, and those numbers are certainly growing.

Deregulation is another thing that has happened in the past decade or so. We see a decrease in the number of railroads, increase in the number of transportation companies, increase in intermodal transportation, a very important issue we've heard about again today, and an increase just in the overall complexity of the transportation network.

We also see that there have been technological advances that the system has to be able to accommodate. We see ITS barcoding, and so on, and just-in-time delivery is another thing that has come into vogue, if you will, which is now critical. Companies truly depend on that, and again, that system reliability issue that I talked about earlier is an important part of just-in-time delivery.

So in terms of truck size and weight considerations, then, you see increased container movements, and just an increase in demand for a system that is responsive to shipper concerns and requirements.

So to sum up, continuing concern regarding infrastructure preservation, heightened safety awareness, increased container movements, demand for transportation services, responsive transportation services, and then of course productivity, are the big reasons that, obviously, we are doing this study.

In the midst of all this other stuff in the United States, even though we haven't had any truly major pieces of legislation in terms of truck size and weight, for quite some time, we still notice that the national truck fleet continues to change, and this is driven primarily by the fact that states in this country continue to establish their own regulations, and in fact, we have 50 different states, and we have 50 different packages of truck size and weight regulations.

The study is designed to support the decision making process at the federal and the state level.

This chart talks about the broad range of issues that we are looking at, and all three of these are very important: safety, productivity, and infrastructure impacts. It also highlights the fact that we are looking at these issues in a context that is sensitive to intermodal competition, environmental and energy impacts and, of course, international trade.

As I said, this is a decision making support tool that we are in the process of preparing, within the study. It is a policy architecture, to steal the Secretary of Transportation's term.

And what that means is that it is a fact-based decision making tool. It is policy neutral: we are not going to have any recommendations that come out under the cover of this study.

What it is, as I said, it is a collection of tools that our Congressional folks can use to evaluate alternative truck size and weight policies or proposals.

I now want to give you just kind of an idea of what the study is going to look like. It will start off at volume 1, an executive summary, which we have not yet produced.

The next volume, volume 2, covers issues and background. It brings everybody up to the same point on the learning curve, in terms of understanding. We have a draft of this; we submitted it for external review and comment in June of 1997. Again, if anyone is interested in a copy, just get in touch with Bert, and we will make sure you get one.

We have volume 3, scenario analysis, which is really the heart and soul of this study. And we are very close to distributing that for external review and comment; it still is going through the last stages of review in the department. We are going to give folks two months to review it, and we are going to take comments, and review those comments, and incorporate them.

So before the study is final, it will have reflected comments, concerns, from a broad range of people.

Volume 4, documentation, just basically walks the interested person through the extensive documentation that underlies this study.

I talked, just a moment ago, about releasing volumes of this study for external review and comment. I don't think the Department of Transportation has ever done anything quite like this in the past, in terms of taking the Congressional Report and inviting comments prior to finalizing it.

But because this is such a contentious, controversial, highly charged issue, we are doing it with this study. And also because it is a policy architecture that we are developing.

So we have had just a broad range of outreach efforts, public meetings, and focus groups. We've had notices in the *Federal Register* inviting public comment. We have received 25,000 cards just from private citizens telling us how they feel about trucks, and truck size and weight issues.

We also have a kind of an internal outreach effort, if you will, going on. We have two groups, a policy oversight group, and a multi-model advisory group that supply technical direction and policy direction to the study. And they have been doing this throughout the study process.

We meet regularly with these folks, and basically they ensure that everything that happens with the study will be done in an intermodal context.

It has been a useful process, sometimes difficult, because we have very different ways, the various modes of very different ways and perspectives in these issues, but we have talked through it, and worked our way through producing the report.

That next box talks about the analytical foundation. We spent a lot of time developing working papers, data bases, models, and so on, that we could use to analyze alternative scenarios.

The long box to your left talks about the scenarios that we've looked at. We have looked at a base case scenario. Obviously we had to have something that we could compare all the alternatives to, base case basically freezes everything in place. 1994 is the base year, 2000 is the analysis year.

The only thing that changes between those two years in our study is growth and BBMT, so we are really able to focus on the change in truck size and weight and how it will impact the various areas of interest.

We have five different scenarios that we looked at. Three are what we call illustrative scenarios, and that mag in the POG group that I talked about just a few moments ago decided what those scenarios would be.

We also have what we are calling policy scenarios, and these are specific scenarios that have been advanced by industry groups and Congress. And we anticipate, over time, getting more and more of those scenarios to evaluate.

In terms of the illustrative scenarios, we are looking at a uniformity scenario, which will essentially roll back weight limits in this country to 80,000 pounds. It will take away those grandfather provisions that I talked about a few moments ago.

We are also looking at the North American trade scenario, and I will talk about that in some more detail in just a moment. And we are looking at what we call all LCV scenario, or LCV nationwide. That stands for longer combination vehicles, and in 1991, with the ISTEA, Intermodal Surface Transportation Efficiency Act, these vehicles were more or less frozen in place, and Congress said that we would continue to allow them where they were operating in particular states, but we wouldn't allow them outside of those states.

This scenario looks at taking down those barriers and allowing these vehicles to operate nationwide.

Policy scenarios, we are looking at something called HR551, that was introduced in Congress the last session, in fact the session before that.

The bottom line is that it will basically freeze everything in place, so we are not going to see much of a change there when we compare that, obviously, to our base case.

In terms of the final policy scenario, then it triples nationwide, and that would essentially allow vehicles with three short trailers to operate nationwide, it is a subset of the LCV.

I've been told that I have only three minutes, so I need to go through here very quickly.

The scenario analysis box talks about the building blocks that we looked at. We looked at a variety of networks and different types of configurations.

Below that it talks about the diversion analysis that we put together, and then the impact areas that we focused on, pavements, bridges, highway geometry, safety, rail impacts, as well as shipper costs, obviously, and that is a big one.

I wanted to talk just a moment about the North American trade scenario. We've talked about the NAFTA issue. We also wanted to look at international containers.

We wanted to look at what would happen if we increased the weight that was allowable on various types of configurations to accommodate international containers.

And this scenario also looks at the impact on short wheel based vehicles. Those of you who understand this issue in detail, we were focusing on a tridem-axle weight limit. We looked at two of them, 44,000 pounds, and another one at 51,000 pounds. At 44,000 it would take our tractor semi-trailer vehicle up to 90,000 pounds, this one would take it up to 97,000 pounds, and again allow for the transportation of international containers.

Next steps, then, are to, as I said, issue our volume 3 scenario analysis for review and comment, incorporate the comments to issue the final report, probably about five months from now, and then support Congress, if they so desire, in analyzing any policy proposals that they might have.

Thank you very much.

MR. BITER: Thank you, Regina. I was going to say, it is a very complex issue, and there is much to that.

Next we hear from Kevin Kelley, who is the Senior Vice President of external affairs for Qualcomm, which is a company that, talk about being on the cutting edge of the technology revolution in transportation, that is it.

MR. KELLEY: Thank you. I'm going to be talking about OmniTRACS, which is a mobile information management system, but before I do that, let me talk a little bit about Qualcomm, and I will also do this real quickly, because we seem to be running a little late here.

Qualcomm is our headquarters in San Diego. It is an integrated wireless company, and we do develop a lot of cutting edge technologies. I should say, parenthetically, people are probably most familiar with Qualcomm because the World Series and the Superbowl were both in Qualcomm stadiums this year. And it was great for me because I got to go to both.

And they offered me, by the way, a ticket to game three or game five of the series, and I'm an old Red Socks fan, for those of you who know. And I said, I'm not taking a ticket to game five of these series, because I don't think it is going to go five. And as most of you know, it did not, it ended in four.

Here is a little about Qualcomm, what we do. The first thing up there is OmniTRACS, which is the first business we developed, which I'm going to describe in a little more detail.

The second business we were in is the cellular phone business, and here is one of the phones that is on the Bell Atlantic system here in Washington. And one of the things we are doing now is integrating these phones with the palm pilot, and we will be distributing that phone this year. When you open the phone it is a palm pilot, then you can connect to the Internet right from the phone.

The third business we are in, which is very important to what we are talking about here, is we are a partner in a world-wide satellite system, known as Globalstar. It is a low earth-orbiting satellite system, and I will talk a little bit more about that later.

And, finally, we are in the software business. We own a software package known as Eudora, which is the most widely used Internet e-mail package.

OmniTRACS is a telecommunication system, but it is more than that, it is an information management system, and it uses a satellite — a stationary satellite communication system — and a lot of interesting fleet management software.

When I talk about OmniTRACS and fleet management, my best example of the kind of software package that we have is one we sell to the moving companies in North America.

I'll describe how this system works. That software tracks the location of the trucks. Say a truck is moving from Los Angeles to Boston, and the same company is moving someone from Boston to Los Angeles.

What it does is it tracks these trucks, say North American Van Lines or Global Van Lines, and at the point of closest approach, they send them to one of these trucking centers, and tell them to swap the trailers and head home.

It is a very, very efficient way for moving companies to operate, because that guy from Boston is away from home less time, and the same thing for the guy from Los Angeles.

This just tells you the kinds of communications we do. The driver can send e-mail messages back and forth, he fills in the blanks, bills of lading type things, and it also has a lot of vehicle information, the temperature, how much fuel, how fast he is going, whether he is stopped or not. It

has a little system where if the driver is out of the truck, and they try to get hold of him, it has a little short-range pager on it.

And these are the kinds of pieces of information that come from the satellite, which is the latitude and longitude, nearest landmark references, and some mapping information.

See, you really missed out on a good one there, because in the computer generated one, it actually has a map of all the locations from one day, and it shows you where all the major highways are. Every time you add a position report they flag that.

And this is how it works. This is also going to be difficult, but basically in order to get position information on any kind of a system you need two satellites to do ranging from two satellites, it tells you where it is.

What happens then is information goes from the truck, up to the positioning satellite and to the communications satellite, back down to a network management center, of which we have two, one in San Diego, and one in Las Vegas, for the North American system.

And then that line that is running across there is a telecom link between one of the management centers, and the fleet manager gets all this information on a computer. He knows at any time exactly where any one of his trucks is, what the condition of the truck is, how much of a load is on that truck, and he can redirect that truck to a different location.

And this is what you have here. That little white unit up there is where the antenna is. For those of you who are into this, this uses a KU band satellite, which is 12 to 14 gigahertz.

And there is a choice of two units that the driver has. And I was a little disappointed, in the last presentation, she had these great pictures of trucks, but none of them had an OmniTRACS system on top.

But let's look at the next slide, anyway. Do you see it up there? That is how it looks on the truck, and as you are driving around, you will see that a lot of the big trucks have these units on them.

In fact, if you look at the next slide there are a quarter of a million of these on trucks, worldwide, 180 in North America, and we have it operating now, of course, in Canada and Mexico. We operate it in Europe using the EUTL SAT satellite; in Turkey and Japan using the J-SAT satellite; and in southeast Asia, Korea, and a very large system in Brazil.

You can see, when we go in to put this system in there, we can serve all of North America from a U.S. satellite. But what we had to do is go on a Mexican satellite to serve Mexico, and we did get into Canada with that. But now with the new WTO commitments, we are now able to do things like operate Mexican service on a Canadian satellite, using our network center in San Diego.

So this is the kind of telecom barrier that we've been facing. Remember earlier I mentioned the low earth-orbiting system? For those of you who are not really into the satellite business, most of the satellites that are up there today are in what are known as geostationary orbits. The rotation time of the satellite is 24 hours, so it looks like it is fixed in space. So the beam always hits the same place on the earth. So you get something that is up over Columbia, it covers North America.

But the new generation of communication satellites are going to be in a much lower orbit. The geostationary orbit is 23,000 miles, but these are going to be up around 400 or 500 miles, and there is going to be a constellation of them that will be circling the earth, and they are called low earth orbiters.

What happens, then, when you put that system up there, you have global coverage, instantly, as those satellites just keep going around the world in constellation. It is a wonderful thing, because this service will be available anywhere in the world, instantly, but think of the regulatory problems.

We have to go around and put ground stations in every country in the world to access those low earth-orbiting stations. But when we do that the satellites will be there, but there will be one constellation of satellites. That is known as Globalstar.

I think the whole point of my message today is that this is a fairly expensive system. It costs about \$3,000 for every one of those truck units, and it costs about an average of \$60 a month per truck to operate this system, but it is more than cost justified because it just makes the trucking system so much more efficient.

But we are continuing to evolve this. I'm going to finish by showing you a new system that we are developing now, where we are integrating this OmniTRACS system with the Internet.

I don't know how many people have ever used the FedEx package where you can key in the little FedEx number, and they will tell you exactly where your package is.

So what we are trying to do is take our OmniTRACS data and integrate it with the Internet to create something known as OmniTRACS on line. It is an Internet-based service that provides real time, tracking of status, and proof of delivery.

Now you have the shipper going down to the OmniTRACS on line, and then what he can do, the shipper gets to access all this information. He can tell where his package is, what truck it is on, when it is going to be delivered, and if it has been delivered.

I'll just show one of the next ones, and I will just go to the conclusion. These are the things, pickup confirmation, tracking, proof of delivery, etc.

What we are trying to do is globally implement this system. The basic message is that there is a huge telecommunications revolution going on, and what it is doing is making telecommunications an international business, and we want to become an international service provider for the transportation industry using satellite technology, fiberoptic technology, and the Internet to supply that information.

Thank you. That is as fast as I could do it.

MR. BITER: I apologize. We got a late start this morning, and we've gone over our time limit, and unfortunately I don't believe we are going to have enough time left for any questions from the floor.

But hopefully the panel members will stay around during break, and any questions you have I'm sure they will be happy to entertain them.

Financing National Transport Networks and Links in Support of Global Logistics

MR. SCHOENER: Good morning, my name is George Schoener. I'm the Director of the Intermodal and Statewide Programs Office in the Federal Highway Administration.

I guess my job this morning is to move this along so that we get to lunch on time, and I will do that, I promise you.

I'm sorry I missed the panel session this morning. We are going through a restructuring in the Federal Highway Administration, and it is not too wise to be out of the office for too long when this is going on. Something known as musical chairs, and I don't want to be the one who doesn't have a seat when it is all over with.

But in any event, it is a pleasure to be here this morning to host this discussion. I wish I could take credit for this distinguished panel, but the conference organizers brought these people together, and I'm looking forward to an interesting dialogue on financing and transportation infrastructure to support global trade and global logistics.

I just want to make a couple of comments, and then I'm going to get on with the panel.

I guess to sort of frame the debate here for this session, this morning, to me a critical issue is, what is the role of the public sector in financing transportation investments, and primarily, transportation investments that have national benefits?

One issue that we in the Federal Highway Administration, and in the U.S. Department of Transportation have been struggling with is, just exactly what is the role from the national level of financing transportation investments?

As many of you know, the programs in the Federal Highway Administration, under those programs, most of the money goes back to the states and metropolitan areas, for them to make decisions on investments.

Often many projects come to our attention that from our perspective at the national level are a very high priority, but perhaps at a state level or a metropolitan level, there are other priorities that are more important.

So the issue we continually struggle with is what is the role of the federal government in financing projects of national significance?

Many of you, I think, are familiar with one good example, which is the Alameda Corridor, LA-Long Beach area, where basically the Department of Transportation and the Congress decided there is a role for the federal government to support projects of national significance, and we provided support through loans, loan guarantees, to make sure that that project was a viable project.

Further support for this concept of the federal government supporting projects of national significance are found in the TEA-21 legislation which was passed last June, which includes two programs. One is the Transportation Infrastructure Finance and Innovation Act, or TIFIA, which basically provides loans or loan guarantees to support projects of national significance.

A second program that the Administration and Congress both identified as being critical is the National Corridor and Border Infrastructure Program.

So I think the answer, from my perspective, and certainly from the perspective of Congress is, yes, there is a role for the federal government to support projects of national significance.

I think some may argue that we, perhaps, don't have enough funding support there, but nevertheless a decision was made that there is a role for the federal government at the national level to support these projects.

What becomes difficult is identifying the national benefits that may be associated with some of these projects that are down in metropolitan areas or at the state level.

So I have asked each panelist, after they do what they were planning on doing beforehand, to at least take an opportunity to try to address this issue of the role of the public sector in financing transportation investments.

So with that, let me introduce Bob Scales, who is a Senior Vice President with the Barton Ashman Corporation.

I'm not going to go through a lengthy description of Bob's background. I've had the opportunity to work with Bob on a bi-national planning study that we did in cooperation with Mexico. Bob was the project manager for that effort, working with a counterpart consulting firm in Mexico.

I got to know Bob really well, and one of the qualities that Bob possesses is being very, very frank, right to the point. I always kid him, I say, I don't think he would qualify for a job in the State Department.

But I think he will bring some very candid observations from that bi-national study, and some candid observations in terms of what needs to be done to finance investments along the border.

MR. SCALES: Thank you, George. I have to be careful of what I say here, because George was my client on this assignment, and also Oscar DeBuen, and Jose San Martin, in the audience, were also my joint clients. I had many clients, probably 100 or so. It was like herding cats, as George mentioned earlier.

I would also like to acknowledge that one of the persons who really got this project going from the beginning was Harry Caldwell, who through his role at FHWA was really one of the masterminds in recognizing the need for improved financial transportation planning and programming activities. He was well aware of the debate leading up to the passage of NAFTA, and also the fact that some investments had been made along the border, back in the early '90s, most notably the Laredo Columbia Solidarity Bridge, where a new port of entry was constructed in about 1991, and opened in the roadways on either side connecting to that port of entry, didn't show up exactly for a number of years later.

So it was a bit of an eye opener in terms of the need for improved cooperation and coordination.

The topic of my presentation is financing of bi-national transportation facilities, and that is a little bit of a misnomer, because the real issue that we faced throughout a 30-month effort was one of trying to find the appropriate transportation improvements.

Those were not always actually involving construction of new facilities, or really the need for more financing. It was really an issue of finding what was the most appropriate kind of improvement and getting everyone to agree. And that was really the challenge that we faced.

I'd like to also acknowledge that a couple of other participants here in the audience, John McCray and Leigh Boske, both from Texas, have had a lot to do over the past 5 or 10 years with publicizing the importance of the NAFTA trade, and what its impacts are on the transportation network in the United States.

First of all, from a public policy perspective, there is a public policy in terms of why there is a need or desire to improve transportation facilities across the United States and Mexico border. It is, obviously, to facilitate trade.

Over the past 10 or so years, leading up to, and immediately after NAFTA, the export trade of the United States, which really is exports that drive U.S. policy, was increasing at the rate of about \$50 billion per year.

In the latter half of that time period, between 1990 and 1995, exports to Canada and Mexico constituted one-third of the growth in that trade, not necessarily the absolute, but one-third in the growth of the trade.

So, obviously, trade with NAFTA partners was very important. Of that one-third, about two-thirds, 22 percent was directed at exports to Canada and 9 percent to Mexico.

I think there was recognition, early on, that Mexico represented an under-tapped market in terms of U.S. trade policy. And so there was certainly an interest on the part of the Administration to develop a stronger trading relationship with Mexico, for a number of reasons. One of which, obviously, was to help the Mexican economy.

On the Mexican side of the picture you will see that the export trade with Mexico's partners, and this is only exports for Mexico, was really pretty flat between 1986 and 1991.

It was not until 1991, or actually 1992, that it kind of took off. One of the reasons for that was an improved trading relationship and parameters with the United States.

From 1991 into 1992, actually, export trade from Mexico doubled.

And then in the period from 1991 to 1995 it tripled overall, and that is really quite phenomenal for any country to increase its export volume that quickly.

Importantly, the trade to the United States, the change between 1990 and 1995, the growth of trade to the United States represented 90 percent of the total.

So you can see that from Mexico's perspective, improving transportation and facilitating trade with the United States was obviously a key part of their export agenda. And so there was an interest there in terms of public policy.

This interest on the part of both countries led to, really, a kind of a unique situation among global trading partners, and that was to develop and sign a memorandum of understanding in April of 1994, calling for improved cooperation and coordination regarding transportation facilities, the planning and programming thereof.

This led to conduct of a bi-national border transportation planning and programming, of which we had the great luck, or misfortune, to be the selected consultant to do this.

I say that kiddingly, because we found ourselves sort of analogous to a soccer ball being kicked around between the various players on both sides of the border, and also on the same side of the border. Actually got kicked more by the U.S. participants, the different states, than we did in our relationship with the two federal countries, which was quite civilized.

We had 10 border states, six in Mexico, and four in the United States. And even within those border states you had an interesting phenomenon of entities, or representatives that lived close to the border, and they paid a lot of attention to the immediacy of the border.

Then you had the representatives from the state capitols, which were a bit more removed and, quite honestly, could see the forest for the trees a little bit better.

And so needless to say there were a lot of clients within the federal agencies; not only the departments of transportation, or SET in the case of Mexico, but we also had the Department of State, or the Secretary of External Relations for Mexico.

Interestingly, we did not have the federal inspection services as direct participants in the study, and I think that was a tremendous shortcoming of the project, but one that was recognized early on, because we were dealing with a transportation agenda, and it turns out that the federal inspection agencies really control the ability to move across the border, rather than transportation issues.

But that was a discovery that we sort of evolved as we went through the process.

There are a lot of you involved in trying to move goods across the border, who wonder why things don't move faster, you might say, in terms of solving problems. There are a lot of reasons for that, one of which is that the people don't really talk the same language, and somewhat figuratively there.

The issue of Spanish and English is not the issue, it is vocabulary. It is entirely different in terms of what is important, the culture of the two countries, the differences between the federal agenda, the state agenda, the local agenda.

There are tremendous differences, and we came to call these differences disconnects: disconnects in terms of how projects were being proposed and defined; whether or not two people could agree on what the configuration of a bridge was; whether roads would show up at the same time on either side of the border; whether money was available; and whether money and construction design appeared at the same moment of time.

There were a lot of conflicting priorities. I think that is something that is a unique situation for the United States in terms of just how much power is devolved to the state and local agencies compared with federal government roles in goods movement.

But as George mentioned, really the action as far as infrastructure investment in the United States is in the local border cities, and also the local border states. And that makes it challenging for the federal government to concentrate and focus on projects of national interest, but it is a fact of life that we have to sort of find our way around.

There is also an interesting opportunity for disconnects between operations: operations of the federal inspection agencies, and plans of the transportation facility providers, such as the states.

These projects take facilities, but transportation facilities often take 10 years before someone comes up with the idea, and it actually ends up on the ground, in terms of doing the environmental clearance, the planning, getting the funding to show up.

It is a tremendously long process. On the other hand, the federal inspection agencies can change their operation overnight.

A relatively recent example of that, which those of you who trade with Mexico, and go through the Port of Laredo know, is just how U.S. Customs Service was able to shift operations, or the focus of, you might say, truck activity between the Laredo Bridge and the Laredo Columbia Solidarity Bridge, just literally by a policy decree. And so it is a challenge to get these entities to coordinate and really understand what is going on at the same moment in time.

The institutional differences really are the fundamental issue with respect to goods movement between these two countries. I don't think you could imagine a situation where the two systems of government could be further apart in terms of power and the way that power is translated into projects.

The federal government in Mexico clearly views things from a national perspective. The roads leading up to the ports are under federal control, and it is the federal government that makes the decisions in terms of where investments are made. And, therefore, it is relatively easier, you might say, to decide better investments from less good investments.

And so things are relatively clear in Mexico, and I was always particularly impressed with the grasp that the Secretary of Communication and Transport, everyone we dealt with, had in terms of the border problem, and where, you know, better investments were, versus less good investments.

On the U.S. side, the federal vision also was very clear in terms of recognizing good from less good. The situation is, though, that the federal government really controls very little of the money, at least in terms of transportation and how it is spent along the border.

That money is devolved to the state and, in many cases, to the local cities and metropolitan planning organizations. And so there it is a completely different set of agendas, and it is really one that is ruled heavily by politics, local politics being translated into state politics.

In Mexico the states have some discretionary money to spend, but it is completely different in terms of the global impact that they can make. And, again, when you move down to the local level, they hardly have any money.

So if we are trying to make an impact here, as far as moving the goods, I would suggest to shippers and carriers that you go to the border state level, and also to the Customs management centers that are along the border, because that is where you can make the most impact, especially in terms of moving south or north.

Then, in terms of dealing with Mexico, you go to SCT. I think you can have a good voice there.

Lastly, there are private institutional differences. And, there, it is closer than anything else in terms of shippers and carriers; both have pretty much the same interests in mind. The way of doing business is completely different. The U.S. carriers and shippers are driven by money and efficiency, and the Mexicans are driven more largely by long established relationships. So if the U.S. carriers are trying to push their way of doing business onto the Mexican counterparts, they really have to respect the cultural differences there.

I'm just going to get on to the financing issue for my few minutes left. When we went to inventory the level of investment being required along the border, or being proposed or planned, we found 500 projects on the U.S. side of the border, and 200 projects on the Mexican side of the border being either proposed or partially under construction or finance.

These amounted to an investment of \$8 billion, clearly well beyond the financial capacity of either country, much less the local states, to deal with. Of this about \$3 billion was financed and \$5 billion was unfinanced need. That \$8 billion is really mostly significant for getting your attention. There is nowhere near that need in terms of actual physical improvement to facilitate trade across the border. A lot of the money on the U.S. side is really for projects that benefit voters, voters who drive automobiles, as opposed to voters who drive trucks.

So you have to recognize that the investment policy in the United States is largely driven by automobile drivers and voters, so for projects to benefit trade, you have to work very hard to try to influence state governments and local governments to include and focus on projects that actually influence this industry, because really this industry helps drive the economy that allows people to afford the automobile.

I think that is the message that we have to always drive home: selecting good projects is what it is all about. There is plenty of money around to do good projects.

So, at least in the trade agenda, you should be focused on communicating projects that benefit your industry, as opposed to perhaps getting lost in the fog of building more, you know, interstates, and wider freeways where the bottleneck is truly at the border crossing itself, and largely on the northbound side, on the U.S. primary Customs. Southbound it is fundamentally a regulatory issue. And those two issues hardly take \$5 billion to solve. So if we keep focused on where the problem really is, again, U.S. primarily, getting more capacity in terms of U.S. Customs, and then southbound, in the regulatory process regarding custom brokers, and how you move paperwork and get customs clearance. I think we can make great progress in bilateral trade.

Thank you very much.

MR. SCHOENER: Thank you, Bob, you didn't disappoint me. I appreciate those remarks, very right on target from my experience in working with the bi-national study and in working with Oscar de Buen and others in Mexico on the border issues.

Our next presentation is going to be from Jean Godwin, who is the Executive Vice President and General Counsel of the American Association of Port Authorities, which is a trade association that represents the interest of public port agencies in the United States, Canada, Mexico, Latin and South America, and the Caribbean.

I've known Jean a long time, and I just want to publicly thank her for the kind words that were in the *Traffic World* editorial, I think it was this week's magazine, about the positive efforts that the U.S. Department of Transportation has been making to advance the intermodal agenda, and she even referred to the intermodal division in the Federal Highway Administration.

MS. GODWIN: Thank you. I'm glad to see so many people here. I was a little worried, thinking this morning about holiday shopping, or people who might want to stay home and watch the impeachment debate, that I might be talking to an empty room. So I admire your dedication. I didn't tape it, but I guess I'll get clips on the news tonight.

I'm going to focus on infrastructure needs for the port system in the United States. Obviously, our port system here consists of both public and private terminals, as George mentioned.

Our association represents the public agencies, the state and local government agencies that are responsible for facilitating waterborne commerce. They are a little schizophrenic. On the one hand they are expected to be businesses, on the other hand, their job is to promote economic development and create jobs, and sometimes those two goals don't necessarily go in tandem, so it is always a challenge.

Our infrastructure needs are obviously many-fold. I'm going to talk about land, I'm going to talk about waterside, and I'm going to talk about development at the terminals as well.

Clearly, congestion, anywhere along that pipeline, I'll steal John Vickerman's analogy that he developed many years ago, like a pipeline you can't have a 16-inch pipe going into a 4-inch pipe and expect the flow to be constant. Everything has to work all the way along the system. So, for us, we are looking at those three pieces.

In this country, traditionally, ports have been responsible for development at the terminals, whereas for the land-side connections we are dependent on privately owned rail companies, and the federal highway system for the highway connections. On the water the federal navigation channels have traditionally been the responsibility of the U.S. Army Corps of Engineers, which is another interesting problem, because we have the Department of Transportation on the one hand, the Corps of Engineers on the other, although over the years the development of communications and coordination between the two agencies has gotten a lot better. It is an interesting dynamic when you have two agencies with different responsibilities.

So let me set the stage for a minute. I know you've heard some of these comments from other people, but to put it in context, the background against what we are looking at, in terms of developing these infrastructure needs, and just talk for a minute about increasing trade, the trend toward the larger vessels, and of course vessel consolidations, and agreements to share space, which would end up resulting in fewer port calls.

As we've seen trade increase, obviously, shippers are looking for cheaper and faster ways to get their products from production to the consumer. The shipping lines want to respond to their customers, and cut costs and improve service. And, of course, truckers and rail lines are looking for faster and cheaper options, as well, to serve their shippers.

These efficiencies can't be achieved unless we improve the connectivity between the modes while maximizing capacity between and within the modes as well.

We need to make the investments to match these infrastructure needs against the background of increasing trade and larger vessels, and the just-in-time delivery.

From the port's perspective, larger vessels and increased trade are having tremendous impacts on what we need to do at the terminals. The larger ships require deeper shipping channels. They are more expensive to operate, so the ship owners want to get them in and out of the port as quickly as possible, and they are demanding those efficiencies.

We need the deeper drafts. And I'm going to talk about dredging a little later. We need larger staging areas. We need bigger and better equipment. It is moving very quickly, as I think some

speaker said this morning. The demands are changing very rapidly, and we are trying to keep up with it.

But with all those needs we are working against a backdrop where there is more and more competition for fewer public dollars. And that is true at the federal level, obviously, as well as the state and local level.

Let me turn to the terminal side. I've talked about the three different areas. I'll talk to the terminal side for a minute.

Obviously, from my members' perspective, those investments are primarily public investments, as we are public agencies. And our members consistently rank capital funding as their greatest challenge, as we've surveyed our members over the last few years.

I mentioned the competition for fewer public dollars. Translated at the local level, we are trying to argue for more money for container cranes, or more police. We are looking at decisions where you are choosing between improving a cargo handling facility, or putting more money into your schools. That makes for a very difficult local politics.

Bob mentioned, in his speech, that freight doesn't vote, that it is difficult to get attention. In fact, it is maybe even worse than that. Freight is often viewed as a public annoyance, because they view the truck as something they would like to get off their roads. Why can't just cars use this highway?

Or they view the railroad as something that is blocking them from getting home, because they are sitting at a railroad crossing.

So it is almost worse, it is the negative. We have to overcome the negative impression that freight is something that gets in their way. They don't translate that picture into what they are able to get when they walk into their department store and pick things off the shelves. They don't realize how it got there, and don't stop to think about it.

So that is the challenge. Even in that environment our ports have made sizable advances in modernizing and expanding their terminal facilities. Since World War II they've invested almost \$17 billion in construction and modernization of shore-side facilities. That is a billion and a half in 1997 alone.

DOT estimates that an additional \$7.7 billion will be invested by 2002. So a lot of money, a lot of public dollars are going into the terminals.

How are they financed? In a variety of ways. We are, obviously, a decentralized port system in this country. We are not talking in major terms about privatizing, or spinning off. We already have a lot of private terminals, but we are not talking about privatizing publicly owned facilities.

But depending on how you define privatization, in a way we are already substantially privatized. In many cases our public ports are really landlords. They have invested the money to build and develop the facility, and they in turn lease it out to carriers or private terminal operators.

Ted Prince mentioned that every carrier wants their own facility now. That is certainly true, and that is one of our increasing challenges.

In many cases the facility is built or improved for a particular customer need, and a long-term lease is signed to generate the revenue needed to pay off the bonds that are often floated to pay for that facility.

So the port's role, in many cases, is somewhat limited on the development side.

There are some recent examples, however, where our public sector partners have really been partners up front in terms of their financing. One is in Los Angeles, the Pier 300 project, which is about an \$800 million project, with 60 percent port funded, and 40 percent APL investment. Their

investment was largely in cranes and equipment, and things that they can own, and take with them, I suppose, at the end of a 30-year lease. But, in fact, there was a commitment up front to share the cost of that facility.

In Philadelphia they renovated a property to develop a cocoa bean facility. That was a \$2 million project. The port paid a million and a half, and the private company paid the other half million dollars.

Those kinds of exceptions, though, are still exceptions, and not the norm. It is much more frequent, as Ted Prince talked about this morning, that carriers are playing the ports against each other, to get the best deal, and the example where we are seeing bids sought for this huge facility, is one of many examples. It is a more public example than what you would normally see behind the scenes, but ports are asked to lower, and lower their costs, or the carrier will take their cargo elsewhere.

And, again, wearing two hats, being a business, but needing to show job creation and economic development, that puts the port in a very difficult situation.

Let me turn for a minute to the land side, and I'm going to agree with a lot of what I heard George and Bob saying about the difficulty of getting attention to funding for freight projects.

Great rhetoric in ISTEA and TEA-21, great policy language about the need to fund freight ports, the need to facilitate international trade, but there is still no separate funding source, or special consideration given to freight.

The difficulty of local politics, and I like Bob's comment that our investment policy in the U.S. is driven by voters, no pun intended, driven by voters who drive cars. It is certainly very true.

With decision making concentrating at the local level, it is always a challenge to compete against transportation projects that are more visible to voters, and more a direct benefit to voters.

Eligibility for rail freight is still very limited under the congestion mitigation and air quality program. There are some opportunities, but that is about it.

DOT and the ports both support an expanded eligibility for rail freight in other programs, in the early stages of TEA-21. We did not prevail. But that is still something that we think warrants some consideration.

As you've heard from other speakers about TEA-21, there is now off-budget treatment for funds to ensure that there is no surplus, but the system still requires you to go and fight for that project, and show that it does provide a benefit.

George mentioned some of the other key provisions of ISTEA, so I won't go any further into that.

Port projects are often a challenge because beneficiaries are national and regional, as was mentioned, but we are asking for local dollars to be spent.

So how has that been addressed? We've heard the Alameda Corridor mentioned, and I noticed that it was also mentioned in the background materials for this panel.

I think that is a good example of how a project really meeting national needs was put together in a package. The Alameda corridor is a \$2.4 billion project that is going to consolidate four separate rail routes into one single 20-mile high-capacity rail route.

Ten miles of that is going to be in a subsurface trench, and they are going to eliminate 200 at-grade rail crossings, a huge undertaking that is going to create 700,000 local jobs and, of course, reduce emissions and, vehicle delays, both for trains and trucks.

The project also includes on-dock rail yards, which are part of a 20-year, \$4 billion port expansion, in addition to just the corridor itself.

But funding for the corridor came from a combination of sources. The two ports of Los Angeles and Long Beach put together \$394 million for the purchase of rail properties. The \$400 million loan from DOT was mentioned. There is another \$347 million from the Los Angeles County Metropolitan Transportation Authority.

There was a \$2 million grant from the U.S. Department of Commerce that funded preliminary design. And the big chunk will be a \$1.2 billion in project revenue bonds to be issued by the Alameda Corridor Transportation Authority. That is a joint powers authority created by Los Angeles and Long Beach to implement the project.

The revenue source to pay back that debt will be user fees for the next 35 years. The first 35 years after the project is up and running, that will be assessed against the railroads; \$15 for loaded containers, \$4 for empties, and then \$8 rail car charge for loaded rail cars, with escalations. That is where the fees start.

This type of project, again, is still the exception, not the rule. It is much more common for a port to have to go through the traditional surface transportation planning and funding process to get a project implemented.

And, often, they come to the table offering to either pay for all or part of the local share of the cost in order to get the project done.

I would like to turn to the water side. The materials I offered for your notebooks really related just to the dredging side, because that is really going to be the hot topic this year.

We have a situation where the funding source for maintenance dredging has been challenged, and will probably fall. I know that this issue was mentioned by Ed Emmett yesterday. I'm sorry I wasn't here to hear his comments.

Prior to 1986 the federal government paid 100 percent for both new construction dredging, which is widening and deepening, and also maintenance dredging, which is simply keeping a channel at its authorized depth.

But put yourself back in the '80s. We had Ronald Reagan in the White House; we had Dave Stockman at OMB; and we had a lot of hardball politics where industries were told, come to the table, cost-share, pay user fees, or you won't get any funding. And that is what happened to the port industry.

So we saw cost sharing instituted for the new construction projects where a local sponsor, which is usually the ports, pays for a portion of the project, and the federal government still pays for a portion. The percentages depend on the depth of the project.

And for the maintenance dredging there was an ad valorem user fee imposed on cargo. At the time they imposed a fee to raise 40 percent of what was needed, because there were a lot of concerns raised about what a user fee would mean in terms of the impact on trade, and the impact on port competitiveness. Particularly ports close to the northern tier were worried about losing cargo to Canadian ports. So they set it at 40 percent in 1986.

Fast forward four years. With Congress sitting behind closed doors at Andrews Air Force Base, desperately looking for money, George Bush saying, "read my lips, no new taxes," and boom, tax got tripled. No hearings, no discussions, no consideration of what the impact might be.

The actual effect of the tripling is that we've raised much more than we've needed, and now we've been accumulating a huge surplus.

The tax was challenged by exporters in the courts, I think, starting about 1994, as an unconstitutional tax on exports. Our Constitution says you can't tax exports.

So the issue is, is it a tax, or is it a user fee? The Court of International Trade in the Federal Circuit, then the Supreme Court, all looked at this and said, there is no relationship between the value of cargo and the need for dredging. Why should a ton of computers pay 100 times more than a ton of waste paper? It makes no sense, it is a tax, and it is unconstitutional.

As a result we are now not collecting the fee on exports. It is still being collected on imports and domestic cargo. In fact, that is enough money to pay for the amount of dredging we do, because we were raising more than we needed.

Exports had only represented about 30 percent of what we needed, and we are still collecting 70 percent.

However, the second shoe hasn't dropped. We have a proceeding before the World Trade Organization that the European Union has brought challenging the harbor maintenance tax as an unfair trade barrier. And the expectation is that at some point that will cause Congress to have to reassess the collection of the remainder of the tax, and that we will end up with no revenue source.

So how do we fund it? This is not an easy question, it wasn't an easy question in the '80s, and all the same problems and issues are there. The Administration has suggested a new tax on vessels.

In fact, they have proposed a tax that would raise almost twice as much as we need for maintenance dredging, and they've rolled in a number of other things that the federal government now pays for, including the federal share of those new construction projects which I talked about a minute ago.

Needless to say, and as you will see in your package, the industry from the ports, to the carriers, to shippers, to labor, has all uniformly come out in opposition to the idea, which hasn't been formally sent to Congress yet.

But that is an issue that we are going to be reading about a lot in the next year: what to do about replacing the harbor maintenance tax.

One of the problems with the Administration proposal is that it narrows the universe of who is going to pay. If you are asking the shipping lines to pay, we could be talking about one individual company assessed \$20 to \$30 million a year.

Now, if \$100 a container isn't going to drive cargo to Canada, try telling Ceiling to pay \$30 million. We are also still very concerned about the negative impact on our export commodities and the diversion problem.

From APA's perspective there are already a number of fees and assessments charged to maritime cargo. About 70 percent of what customs collect is attributable to waterborne commerce. We think we don't get a lot of benefit back for all those fees, and we think that these kinds of responsibilities are a federal responsibility. They have been for many years. They were up until 1986, and still should be.

So we have taken the position, which is kind of like spitting in the wind at this point. But if you read the press clips that we put into the notebook you will see that maybe other people are starting to rally around it.

Maybe the idea of going back to using existing revenues to pay for maintenance dredging is an idea whose time has come.

The difficulty in crafting a solution that doesn't do more harm to our trade picture than it does good, may lead Congress to come to that conclusion in the long run, as well.

So those are the challenges we face as ports. As I said, the one that will be most visible to you in the next year will be the dredging issue, because it will be hotly debated. And we will find

out, I guess, at lunch if anything exciting happened up on the hill this morning while we are all doing our business.

Thank you very much.

MR. SCHOENER: And when you said you are going to find out what is happening, I thought you were referring to John Horsley's remarks. But I guess not. He may have something to say about this harbor maintenance tax.

Our next presenter is Kopicki. Ron is a principal private sector development specialist with the World Bank's private sector development department. Ron, for the last six years, has been involved in providing advice to governments on the privatization of state-owned railroads, ports, trucking and distribution companies, in the former Soviet Union, China, South Asia, the Middle East, and South and Central America.

As we heard yesterday, Ron is one of those truly logistics experts. So we are looking forward to his remarks this morning.

MR. KOPICKI: I'm confronted this morning with a tough logistics problem, 20 minutes of things to say, and 10 minutes to say them in. George just gave me a note, I guess I only have 8 minutes now.

A very brief introduction. The World Bank is the organization that is providing lunch later today, if I succeed.

We are also a multinational lending organization, which is new to this business of supply chain development. From our point of view this is a new line of business.

And we think it is very important that the bank become involved in this area, because increasingly the world is being divided into two sets of markets, two sets of economies.

One set, which is well represented here, is high service economies, which compete effectively on a time-delivered basis. But there is another group of economies, which are the low service economies, and these are our clients.

Traditionally, these are the economies that have been providing raw materials and labor intensive goods to the high service economies.

Increasingly, the service content of those goods is a determinant of whether these low service economies participate or don't participate in global trade.

So the challenge that we are taking up is the challenge of developing and investing in service capabilities.

Now, the bank is very good in developing big infrastructure projects, but we've had relatively little experience in actually investing in service capabilities.

Investments in logistics management competency, in a high service culture, in markets, market mechanisms, in responsive logistics systems, these are new and challenging problems, and complicated. We are very modest in taking the first fledgling steps to develop framework principles, a conceptual framework that will allow us to add value in these areas of new endeavor.

An additional complication is that unlike our sister company, the IFC, the bank cannot invest directly in or with the private sector. So as we've heard, over these past two days, this area of supply chain development, and of logistics efficiency improvement, by and large, is a private sector undertaking.

There seems to be a strong feeling, at least in this group, that the role and function of our traditional client, the public sector, should be tightly circumscribed.

In any case there are a number of issues in this area of investing in supply chain development, which we are taking on. The bank has done a great deal in the area of enterprise reform, corporate restructuring, privatization.

But we have done relatively little work in the area of the reform of the enterprise environment, the space between the production and distribution units.

And therein, I think, lies a lot of opportunity, a lot of value to be created.

We have another set of issues that involve the kinds of loan instruments that we can put to work. Again, the cost of developing loans is significant from our point of view. It is what determines whether we can deliver capital efficiently or not.

So the issue of the kinds of instruments, the kinds of arrangements on lending, or on leasing some of the assets we provide is a related issue, and we are working our way through some of these points.

Another major problem is the counterpart question. There are few, very few, governments that we work with, who have any representatives within government, of either logistics interests or

supply chain policy. Indeed, intermodalism, and multi-modalism, simply isn't represented by most of the client countries with which we work.

There is another set of issues involving policy leverage points. Typically the bank doesn't simply invest, but we also look to governments to make market oriented reforms, to open their economies to improve the efficiency with which they use resources.

And there are questions here about finding that point of contact within the government, to leverage some of the potential great gains, we believe, available in this area, the supply chain development.

There are issues, also, about the role of the public sector. I mean, what legitimately, in developing countries, where government is the active agent, the change agent, and there are no other ready alternative drivers of the change process to deal with. How exactly do we energize and activate government, and then how do we de-activate, or look to government to disengage once some of these changes are up and running?

The set of issues about the creation of what I call the middle sector. We think there is great opportunity to work with the private sector through associations, through trade associations, industry associations, professional associations, who represent a collective interest, and who can work with us to realize common social benefits in this area.

And, finally, there are two other issues, one involving multi-national corporations. I think it happens that the skills and competence and capability to develop supply chains, probably appear to reside most within the four corners of multi-national corporations, who are in a position, once these markets are open, to simply deliver one end or the other of the supply chain, to connect developing economies to the rest of the world.

And, again, there are issues about how we should be dealing with these animals.

And, finally, there is the issue of defining the market boundary lines, fostering or encouraging, facilitating, multilateral trade agreements. What, exactly, is the role that is appropriate to an institution like ours in this area?

Clearly, there is not much of an initiating role, but in terms of improving internal market efficiencies within major trading blocks, and a lot of these are popping up all over the world, everyone wants to have a NAFTA to be connected to, or the European Union.

So there are a number of issues that are truly complicated, and that are going to require a lot of headscratching.

In any case we also believe that improving the efficiency of supply chains is not peripheral to economic development, but rather goes to the essence of the development process.

So, for example, we believe that supply chains actually execute the basic blocking and tackling that allow internal markets to operate within developed economies.

Supply chains are the mechanism that provide market feedback; that tell the producers how much to produce, how to schedule, in a certain time sequence.

And to the extent that these mechanisms work well, the market is clear. And to the extent that they work badly, markets don't clear. And, indeed, an appropriate matrix, we think, for measuring the efficiency with which these internal markets operate and clear, is the ratio of the aggregate logistics cost within an economy, to the aggregate production within that economy.

And, indeed, there are huge differences in the levels with which national economies operate, as market flooring mechanisms. And this aggregate logistics cost is a dead weight for the economy.

This is, in fact, the first claim on capital resources within developing economies. It displaces every other claim on capital, including claims for fixed asset investment, or investment in human capital.

And, indeed, it comes prior to, I submit, things like national governments. These are essential needs to complete buy/sell transactions of essential materials.

At the level of the firm, the supply chain, the appropriate matrix for measuring supply chain efficiency is simply the cash flow that is absorbed within a supply chain.

And, indeed, we find when we make some comparisons, that the difference between the cycle time, the level of the individual costs, the number of decoupling points, the number of inventory, compiling points, within supply chains in developed countries, are simply much greater than their analogues in more developed countries.

And, indeed, this is where this working capital resides. It is in the difference between the cash flow cycle for a highly intensified, highly motivated, highly liquid supply chain, and one in which the same pressures and incentives don't operate.

So one of the leveraged points, clearly, is competition, and competitive policy, in creating the set of incentives to make these supply chains operate more efficiently. Deliver the same goods in less time, and at less cost.

As I mentioned before, I would just like to talk about some basics. When we talk about supply chains, what we are talking about is basically four parallel functions.

Orchestrating these four, and balancing and coordinating them is really the work that needs to be done well in order to realize some of the gains we've just discussed.

And one of the things that move through supply chains, of course, is physical goods. Physical distribution is essential, and most of the discussion we've had these last two days has focused on that issue. But that is not all that supply chain management and, indeed, supply chain development is about.

Equally important are the other three parallel processes, one of which involves the movement of cash. So what happens in every supply chain is that goods move forward, and cash moves backward.

And it is the speed with which these transactions are closed that determines how much working capital is required to push one unit of product through the pipeline.

Another essential element, a prerequisite to making the cash payment, is the proof of ownership, the title, the right of control, which is transmitted through a number of different documents. Increasingly, these documents are electronically formatted, but conveying and delivering without dispute, that piece of data, that legal right, is equally important to make sure that supply chains operate.

And then, of course, there are a thousand and one different types and forms of information that move through supply chains, but the most important information has to do with the information which allows markets to clear, which tells producers how fast goods are being consumed, which allows producers to make adjustments in their production scheduling and processing, to allow markets to clear.

So it is this feedback mechanism that lies, I think, at the heart of all of the electronic and satellite based, and very sophisticated technologies that we are talking about today.

We are talking about a very different set of instruments to realize a more rapid turnover and flow of these four ingredients in most of the client countries where we work.

The institutional arrangements through which these processes are completed include a number of different kinds of institutions. And a lot of our work has to do with institution building and institution development.

And we have a number of options of institutions to work with. First of all, we have the multi-national service companies. And then we have the multi-national production merchandising and distribution companies. Then we have domestic distribution networks that typically involve multiple participants, in addition to the buyer and seller.

And these intermediaries, these third parties, are fundamentally important. Then we have state managed supply chains, and then we have central and regional markets.

And I think, increasingly it is the market development solution that looks very attractive. And in some ways, several ways, in which the bank thinks it can begin to invest in market development mechanisms.

In any case the measure of effectiveness in all of these areas basically has to do with the scale, the scope of the markets that can be economically accessed. It has to do, very importantly, with risk minimization. Internalizing risks in individual transactions is the essence of creating supply chain efficiency.

And, of course, there is a risk of lost sales, the risk of price deflation, loss, and damage. We have heard something about that, the failure to deliver on time, the failure to deliver at all.

And these risks need to be assigned. They need to be managed through the number of institutions, legal, arbitration, whatever, commercial institutions.

And then the flexibility and adaptability of supply chain is also essential. Markets change, requirements change, and having the ability to reconfigure in response to these market pressures is another very important measure of effectiveness.

And finally is the incentive to minimize the cycle time, and consequently the amount of working capital required to complete a buy/sell transaction.

I'm going to skip over some very interesting things, at least I think so, and talk just a little bit about some of the basic principles here, that we think, in a preliminary way, begin to apply.

So we are beginning to close on some notional concepts, and normative principles about how government should involve itself in the area of trying to improve supply chain efficiency.

And some of the overriding principles seem to be the following. All costs associated with the completion of buy/sell deliver transactions should be internalized in the transaction, and all risks of failure to perform should be included and reflected in the price of delivered products. So that is one principle.

Another is that a basis of fair competition should be clearly defined, and that entails some transparency, and some equal treatment, and some set of competitiveness notions that have application in markets which are just taking shape.

Efforts should be made, we think, to remediate service discontinuities, both within regional and national markets that provide a nation building capacity, intermodal in that context, and multimodal has special merit and interest. It is one way to allow the limited elements of an infrastructure transportation network to work more efficiently together.

Parallel efforts need to be made to provide adequate trading infrastructure. By that, the co-location of storage and transshipment, and grading and commodities securitizing, capabilities adjacent to these multimodal transfer locations, makes a great deal of sense.

Putting the decoupling points and the liquidity points next to the transportation nodes is one way, again, to create an architecture for market development.

And lastly, public procurement and official aid, food aid, whatever, should be used and organized in a way to induce the development of local supply chain management competency.

I think to the extent that developing countries are buying products, or multi-national institutions are providing aid, and these opportunities aren't used to leverage skills development and competency development opportunities, we would be remiss.

As I said, this is an area of relatively new endeavor on the part of the bank, but we are excited that it offers some tremendous opportunities for economic development.

Thank you.

MR. SCHOENER: Thank you, Ron. Our final presentation is going to be made by Dong Liu, who is an investment officer at the International Finance Corporation. He is substituting for Decklend Doff who can't be with us this morning.

Mr. Liu has been at this World Bank group for five years, and he has worked on infrastructure projects all over the world, including in Turkey, Vietnam, Indonesia, Bolivia, Panama, Uruguay, and more recently in Columbia and Armenia.

In the interest of time, Mr. Liu, would you like to come to the podium?

MR. LIU: Thank you, George.

I'm really pleased to be here. Before I begin, I would like to speak on behalf of my director. He is very sorry he has to miss this opportunity because he has to make an emergency audit presentation.

Like many speakers in front of me today, I would like to begin first with a little bit advertising, promoting. I would first talk a little bit about what I see, International Finance Corporation does in general, and in particular in infrastructure projects, and the port projects.

And then if I have time I will go into a case study, where I will talk a little bit about a port project that I've seen financed in Panama. It is a great success story.

As probably many of you know IFC is a member of the World Bank Group. Its mandate is to promote private sector development in developing countries.

Number one, it is a bank, so it provides loans to projects. It also plays an investor role, so it provides equity investment as well. And it also mobilizes capital from other private sources, so it plays a catalytic role, if you will. Also, it provides advisory services.

Basically we follow a set of guidelines. We only work, as was mentioned earlier, in the private sector with private sector operators. We provide financing for financially viable, economically justified, and environmentally and socially sound projects. The list is getting longer and longer.

And because of our catalytic role, we provide financing for only a maximum 25 percent of project cost. We would like to bring out private capital financing.

We finance projects both large and small, but typically our project size is much smaller than, say, the typical projects the World Bank Group, our sister organization, finances.

This chart shows the percentage of financing that IFC does. In fiscal year '98 the infrastructure sector is about 20 percent of all the financing IFC provides. IFC provided about \$6 billion last fiscal year.

And this is portfolio by sector. Also, infrastructure is the second largest sector that IFC finances. The largest one IFC finances is capital market.

By infrastructure we mean the following four sectors: transport, power, telecommunications, and the utilities. And for infrastructure, last year, for power, the financing is about \$600 million. For transport and the utilities it is about \$400 million, and for telecommunications it is \$170 million.

Now, why do we promote private sector involvement in particular for the projects? You are familiar with many of the reasons because of the high investment costs. So if we can promote private sector involvement, and we can relieve the government of high investment costs, and those in general are a port that is run by a private operators, it is typically more efficient than, you know, if run by a public sector.

So we want to promote efficiency, and also the construction risks and the operating risks are now shifted to private sector. For developing countries, port investment would also attract foreign capital investment.

The type of private sector involvement, typically, involves the following: management contract, franchise concessions, and direct private ownership.

Why can ports can be an attractive investment from the private sector's point of view? One is that it typically earns hard currency. You know, in times of currency depreciation, this is a huge plus.

And it is often profitable under government control, because many times the government has the monopoly of control, and charges a huge price, and its efficiency is not so good. So it provides

opportunities for large efficiency gains. Also once the port is built the operational cost can be relatively low.

I think we started our experience in financing private sector ports in 1993. We have financed a total of about 15 projects, in Argentina, Bolivia, Columbia, Mexico, Panama, Vietnam, China, and Kenya.

Total project costs is \$500 million: total IFC financing \$120. That is for our own account. We also syndicate so other private banks come in together and provide financing.

Basically we would like a clear legal contractual framework, a clearly defined regulatory framework, and we would like the private sector to take full control of running the business. We would like to have sponsors, private sponsors that are experienced, that know what they are doing. We would like to have freedom of setting the tariffs, so that they can be set at commercial rates. And we would like to have practical financing for that.

And, also, the private sector would not go into a country if a country does not have a stable macroeconomic environment.

I will go quickly over this case study. This is a port in Panama. It is on the north entrance of the Panama Canal. This is the project we financed in 1994.

It is a container port, and also it is a car port. The market it catches is mostly transshipment for the containers. The project cost \$100 to \$111 million. We have two major sponsors. One is MOINSA, which is a motor vehicle importer, and a distributor for South America, Central America, and the Caribbean, and SSA.

Services of America is a major port, and the Rio terminal operator, based in Seattle. It has a 20-year concession, and the government has general oversight.

Now, about the strengths and weaknesses of the project. We had some major concerns when they first came to us. First of all, it is a greenfield project. It basically started from scratch, and as a result it has major market risks, because it had to attract traffic from other existing competing ports.

The competing ports are mostly Miami and Jamaica. And the political risk. In Panama the unions were really opposed to this privately owned port. And the macroeconomic risk. The government, at the time, was in huge debt, and they couldn't pay the debt off, and they were negotiating through the Paris Club.

So you wouldn't find any private sector who would go and finance this project at that time. The strengths are that the sponsors are really experienced, and they have a clear, defined business rationale. They basically want to capture this transshipment market.

And it is U.S. dollar revenues, and it has a long-term 20-year concession, and it has complete freedom in setting tariff rates.

Now, we came in and we provided advisory role on project concept. Basically they came to us asking us to finance a car port, and we told them, after an examination, that the market for car import and distributing it was not sufficient, because MOINSA was the exclusive distributor for LADA car, and we don't believe there was a large market.

So a talk was done, and eventually the concept was that we should build a transshipment container, as well as a car port.

And we provided financing, \$25 million from IFC, and then we syndicated \$35 million. Basically, you know, the project generated lots of benefit for the society in general, and that is the detail of the financing plan. We don't need to go into that here.

In the interest of having lunch on time I'm rushing through.

Results: We closed the deal successfully and the marketing has been growing very strong, and it has spurred reform in the port section of Panama, and it has attracted new sources of competition.

Let me give you the physical description of the port. It is 600 meters long, first for containers, and then 200 meters long for car roll on and roll off.

In 1995, the year they completed the first phase of this construction, it handled 100,000 container moves.

By 1998 the volume reached 450,000 containers, so it is four times. And the average cost has been declining dramatically over the past four years, and revenues have been maintained; they are relatively stable, in spite of the increasing competition.

And the value of shares has increased over the past four years by a factor of 10. It is a hugely profitable investment.

That is the end of my presentation. The last thing is that private sectors can run the port quite efficiently, and the IFC's role is to promote such activities. Thank you.

MR. SCHOENER: Thank you. Are there any questions?

[QUESTION INAUDIBLE]

MS. GODWIN: I can't speak for the government. The ball is in their court to address the problem, but I agree with you that there is a legal problem that is going to have to be addressed.

[QUESTION INAUDIBLE]

MS. GODWIN: There, again, it is always on a project by project basis, unless it is a specific, or even in the Alameda Corridor case, that was a project by project basis.

There hasn't been any separate funding, any separate pot or program set up for ports, or for intermodal projects, or freight projects, specifically. You do have to work through the process.

As these bills are processed each time, there are particular projects included as high priority projects, some of them are port projects, but there are usually hundreds of them, and we are among the many.

George, you may be able to answer that better than I can.

MR. SCHOENER: Yes, in the TEA-21 legislation this was a debate that occurred about whether there should be separate funding for the land side access to ports.

And the end result of that was Congress decided not to do that, and to maintain the decision making process at the state and local level for the national highway system fund, surface transportation program funds that are eligible to provide that access.

One thing the Congress did do was request that the Department of Transportation do a study of land side access to major intermodal terminals, which we have currently under way right now, and we are looking at those facilities, looking at the condition, operating characteristics of those intermodal connections, if you will, to those major intermodal terminals.

A key aspect of that study is looking at investment levels that the state governments and local governments are making on those connectors, and then we are to report to Congress the results of that study.

I think the motivation behind the study, Jean was involved in that, along with other interest groups, was to possibly suggest, in the next reauthorization of the transportation bill, that there may be a legitimate argument to have a special pot of money for land side access, but right now it doesn't exist.

[QUESTION INAUDIBLE]

MR. SCHOENER: Yes, that is a good point. Leigh Buske is making the point that I think that basically probably is the size of the funding for the national highway system. To the extent that those dollars can be used for that purpose, it is a correct statement. But it is not solely for that purpose. Obviously the national highway system funds can be used for a whole range of activities. So perhaps we may want to burden the final document, make a slight editorial statement there, so it is understood that there isn't this \$28 billion specifically for land side.

MS. GODWIN: The difficulty with asking for a dedicated source of funding is we might get a very small little pot. We might get, here is \$5 million for ports. And then when we go to our state or local government and ask for more than that they will say, you have your money over here.

So if the dedicated source of funding is so small that it doesn't begin to meet our needs, and it cuts off our ability to compete under the other programs, we have probably done ourselves more harm than good. So it is a balancing act.

LUNCHEON GUEST SPEAKER

Mr. John Horsley

MR. SPROLES: Good afternoon, ladies and gentlemen. I'm Max Sproles, Vice President with Frederic R. Harris, and the immediate past Chairman of the American Road and Transportation Builders Association.

I say that because we were very active in the TEA-21 legislation, and worked very closely with your luncheon speaker from DOT. I'm very happy to be here to introduce him today.

John Horsley is the Associate Deputy Secretary of the U.S. Department of Transportation. John was nominated by President Clinton and confirmed by the Senate to serve as Associate Deputy Secretary of Transportation, and Director of the Office of Intermodalism.

Working for Secretary Rodney Slater, he is now the department's advocate for intermodal policy to improve efficiency, passenger convenience, and encourage the teamwork among all modes of transportation.

From 1993 to early '98, he served as DOT's Deputy Assistant Secretary for Government Affairs. Prior to joining the Department, John served five terms as the County Commissioner in Kitsap, Washington, just west of Seattle.

He is a graduate of Harvard, did graduate study at Georgetown, is an Army veteran, and we heard a little bit about that part of his career. Also he is a Peace Corps volunteer, and served on Congressional staff for several years, as well.

He is past President of the National Association of Counties, and Founding Chairman of the Legal America Coalition.

Please help me welcome John Horsley.

U.S. Initiatives to Improve System Efficiency

MR. HORSLEY: Max, thank you very much. My father would have believed that introduction, and my mother would appreciate it a great deal. Thank you, again.

Let me compliment Max. ARTBA, the American Road and Transportation Builders Association was one of the leading private sector organizations that worked hand in glove with the members of Congress, specially Chairman Shuster in the Transportation Infrastructure Committee, and Robert Byrd, in the Senate, to craft the tremendous victory that we achieved this last year in passing the Transportation Equity Act for the 21st Century.

A year ago, two years ago, no one would have believed that we would have a bill of the proportion of \$200 billion that will serve this country's infrastructure needs, for a long time. And a great deal of that credit goes to a number of coalitions. One of the leading lights there was Max Sproles, and Pete Ruane, who you will hear from later today, for ARTBA. So thank you very much.

Well, first of all I want to commend the World Bank, commend the Federal Highway Administration, OECD, all of the organizations that have pulled this important dialogue together. I'm sorry I wasn't able to join you for the discussion you had yesterday and today. I was told that Rich Biter, my Deputy, has been here. I'm glad to have the opportunity to focus on something of substance that matters to the future of this country, this atmosphere in the world, rather than some of the other things that are going on in town today that aren't quite as savory. I won't even get into that other stuff, I'm trying to kick myself, and keep myself away from what is going on in Capital Hill right now.

I mentioned the role that ARTBA played, and how important this TEA-21 Act has been to the United States. Let me go back a couple of years. One of my tasks for the Secretary is to be the liaison with the governors, with the mayors, with the county officials, with all constituencies that have a stake in our transportation system in the United States.

I was attending a meeting of the National Governors Association three years ago in the run-up to the consideration of this important national legislation.

The speaker that had been invited to brief the governors on the importance of the U.S. transportation system, I would have expected to be from the construction industry, to talk about the vital task ahead.

But, instead, the speaker they had was from Ford Motor Company. And what he outlined was the logistics challenge that Ford was facing — this was 1995, I believe. And the presentation he made was the tremendous increases in productivity that Ford had been able to squeeze out of their processes to date.

But he laid out their 10-year plan, and they intended to reduce their production, foreshorten their production process through advances, and supply chain management, and logistics, by an additional 75 percent.

And what he was saying to the governors, and he was saying to every governor in our country, we are doing our part in the private sector. They thought they could achieve that objective of foreshortening the production process, and achieving those tremendous increases in productivity, if they could get the public sector to do our part.

And that is why I think the discussion you've been having here, for the North American experience, but also Dr. Blonk, as it relates to the European experience, and to the world, this is a process that is going on in industry throughout the world.

Decreasing, through the use of logistics, the costs of production. But a critical partner in every part of the world in achieving the productivity gains that industry is seeking is what we in the public sector can do.

So let me talk about that for a second. And let me mention, these last two weeks, I've been involved, together with Secretary Rodney Slater, in a couple of events that are representative of our commitment to making a difference, and making a contribution from the public sector.

This week, three days of this week, Secretary Slater led a western hemisphere transport ministers meeting. Thirty-four countries from throughout the western hemisphere met in New Orleans to talk through what we, as this hemisphere, can achieve through a greater collaboration, improvements in infrastructure, improvements in technology, to facilitate the movement of commodities and people throughout this hemisphere.

And there was tremendous promise, and a tremendous amount achieved in that event. The week before I joined the Secretary to dedicate a \$2.4 billion Alameda Corridor improvement in downtown Los Angeles connecting the ports of Los Angeles and Long Beach to their markets to the east.

In the United States the combined strength of the ports of Los Angeles and Long Beach handle 24 percent of the maritime intermodal trade that comes into the United States from the Pacific Rim, but it needs to get through the Los Angeles basin, which is home to 16 million people.

You can imagine the cross riff of one of the most heavily congested urban area in America, and then moving these increasing volumes of goods from these two key megaports through town and on to markets.

This has been one of the premier projects that our office has managed for the last three years, and the good news is we launched it, a \$700 million component, designed, built, contract with Tudor-Saliba, a terrific contracting and design firm out there in California, and we are expecting that project to come on line, on time, under budget. It was a great day for freight, and it was a great day for mobility in Los Angeles.

One of America's greatest philosophers played catcher for the New York Yankees. His name was Yogi Berra. And he once observed that if we keep doing what we are doing, we will keep getting what we got.

And what industry is telling us is the status quo isn't good enough in terms of logistics, in terms of moving freight.

And there is another expression, I don't know where in the world this one came from, but I think this was in my Army training which was, lead, follow, or get out of the way.

And let me touch on some ways in which I think the government, in many cases, has achieved a great deal by getting out of the way, and in other instances by leading, and in some cases, following as partners.

And let me take you through some examples. I'm proud to be a member of the Democratic Clinton-Gore administration. But the previous Democratic administration, where a senator from my state, Brock Adams, served as Secretary of Transportation, was back in Jimmy Carter's era, 1977 to 1980.

And one of the singular most important accomplishments of that era, the Jimmy Carter era, was deregulation of U.S. transportation. We deregulated the trucking industry, deregulated the aviation industry, and deregulated rail.

And what you have seen in the flourishing success of aviation, rail, and trucking in America, in the late 1990s, in no small part was due to that leadership in deregulating industry that took place under the democratic leadership of President Jimmy Carter.

If you look at what has transformed in the rail industry today, in 1980 the railroad industry was in the toilet, and going, down the drain. With deregulation, and with innovations such as intermodal freight, double stack intermodal, and the other productivity gains that the rail industry has been able to put together, they are healthy and thriving.

Some of them, through mergers, bit off more than they could chew, and are making the adjustment, but in general, if you look at the quality of service, and the status, and the bottom line of the railroads in 1980 versus nearly to the year 2000, it is night and day.

If you look at the fastest growing area of freight in America today, and probably in the world today, it is overnight express freight, air freight. But the overnight small package delivery system is an exploding industry. But that integrated series of carriers, and the service that, whether you are a manufacturer, or an auto parts store, your business depends on is day-to-day overnight guaranteed delivery, where for sure you place an order today, it is on your doorstep, and in the customer's hands the next afternoon.

That only could have come about through the deregulation that was put in place of the trucking industry and of the aviation industry.

So one of the most significant lessons that we have learned in the '80s is that, in some cases, getting an out of date regulatory framework out of the way is a great way to open the door to industry to innovate.

There is an increasing imperative that we are hearing from industry in America, and I suspect in every sector of the world, to increase the ability for just-in-time delivery and to increase the ability of industry to achieve reductions in the production cycle.

Let me describe two trends that are daunting challenges that industry will face, and we in government have got to do our part to help them wend their way through the minefield of these challenges.

The first is the challenge of growth in population, and accompanying it here in the United States, at least, has been a tremendous growth in vehicle miles traveled.

The other growth trend I wanted to mention was the growth trend in freight itself. The first time that Wim Blonk and I got to share a podium together was this last June, when the National Academy of Sciences and the European Union joined together for an event called New Vistas in Trans-Atlantic Science and Technology Cooperation.

After Dr. Blonk and I were on the podium together, we went into breakout sessions, and I was joined by Horst Soboll of Germany for a discussion of how to improve trans-Atlantic intermodal services.

And since I was on the U.S. side, and our visitors were coming from the Atlantic side, I was sure that what Horst Soboll would address, and he was representing the Daimler-Benz, now Chrysler Daimler, or Daimler Chrysler, I'm not sure — Benz Chrysler, okay, here we go.

But I was sure what he was going to be talking to me about was freight logistics, how were we going to improve freight logistics. But, interestingly enough, what he said wasn't that. He said the biggest challenge we face in Europe today is urban congestion and the need to improve the attractiveness of transit, so that more people travel by transit rather than alone in their automobiles.

And I said, wait a minute, that I was going to brag on the European experience, to convince the Americans we have to change our ways. And I thought the dialogue was going to focus entirely

on freight logistics. And he said, no. The challenge we face in metro areas throughout Europe is congestion.

Well, folks, the challenge we face in major American markets is congestion. America grew by 60 million folks over the last 30 years, and according to the U.S. Census Bureau, we are going to grow by another 60 million over the next 30 years.

But just as significantly, during the time when we grew by 60 million in population, a 24 percent population increase, vehicle miles traveled doubled, a 100 percent increase.

Now, if we forecast that forward, the rate of growth in VMT has slowed, but it is still exceeding a sustainable rate.

So one of the challenges that we face in every metro area in this country, and I suspect in many metro areas throughout the world, is how to improve the flow of logistics and freight, in spite of the increasingly congested highway systems.

And it is principally highway systems that are congested, because the rail and transit systems are the antidote to the congestion in our highway systems.

The other factor of growth that I wanted to point to is the sheer growth in volume of freight that we are dealing with. I mentioned the Secretary and I traveled to Los Angeles last week. What we heard at that event, in the Alameda Corridor, from the planners in the Port of Long Beach, is that currently they are handling a volume of \$116 billion in commodities coming across their dock, through LA and off to markets in the East.

That is expected, in the next 12 years, to increase to \$253 billion. So 120 percent increase over the next 10 to 12 years, in that port alone.

And if you look at the rate of growth in ports here on the east coast, such as Newark, New Jersey, growing at 13 percent, Hampton Roads, right here in Virginia, at 14 percent Charleston, South Carolina, growing at 19 percent, you can see, in each of these gateway cities, and it is true in the Gulf, it is true on the East Coast, it is true on the West Coast.

I'm from the Seattle area. It is clearly a major daunting challenge there. We see, as we enter the global era, international, intermodal freight increasing internationally at 9 percent, in the United States, at 6 percent, and in certain key ports double and triple those rates.

A tremendous challenge is how we are going to accommodate the freight on the docks, find efficient ways to move them off the boats, and onto either truck or on-dock rail, and then get through these congested metro areas.

Now, the good news is, through the passage of the Transportation Equity Act of the 21st Century, we have been given both techniques and dollars to begin to address that problem better than we have in the past.

Let me give you an example. In the Seattle area, where I'm from, they have taken a page out of the book of the Los Angeles experience, and created not another Alameda Corridor, but they call it the FASST corridor. And who doesn't love a good acronym? Jess, were you the author of that acronym? Freight Action Strategy for Seattle and Tacoma.

Let me describe this project. What they have is the combined strength of the Port of Seattle, and the Port of Tacoma, the second largest load center in the country, after LA/Long Beach.

And we have a long way to go before we are going to catch up with Rotterdam, but we are learning, we are trying. What they have there is tremendous increase in volumes coming into those ports, and what is being overloaded, in part, is the rail system.

And so what Burlington Northern did is open up a second rail line, so they are going to bring in one set. The western movement is going to come over Stevens Pass, and the eastern movement is going to go over Stampede Pass.

But what they are doing is increasing the frequency of trains, and the length of the trains through the middle of this metro area.

And so what the local communities, the state, the railroads, all have faced up to is the need to make about a \$300 million investment in a series of bridges that will allow the trains to go at a fast clip, get out of the metro area without congesting surface traffic, so you will have a whole series of great separation bridges that will facilitate the movement of trains, but also help the economy not be stalled by incredible congestion.

The Seattle area is blessed with either being the fourth worst congested area, or the seventh worst, depending on the rater, but who is counting? It is a mess.

So the Freight Action Strategy for Seattle and Tacoma is a critical element of the development of this booming northwest economy.

In LA we've succeeded in this \$2.4 billion Alameda Corridor investment. Now the next stretch, 35 miles long, the Alameda Corridor is 20 miles long, the next 35 miles through the San Gabriel Valley, they have a \$900 million improvement, and the first stage of that is a \$300 million series of bridges. Again, they need to separate rail from surface traffic, and TEA-21 included \$135 million for them, \$44 was included for the Seattle project, and a similar type of investment in the New York-New Jersey area.

So resources are beginning to focus on these types of improvements. George Schoener and I, over the last summer, hosted listening sessions in San Diego, California; in Detroit, Michigan; and in Houston, Texas, where we were talking about a new program in the TEA-21, which was our borders and corridors program.

And, again, the Congress is beginning to tune in on the need for moving freight to international destinations through these corridors of national significance, and to address, both on the Canadian border, and the Mexican border, how we improve both infrastructure and operations to speed the flow of commodities across this growing trade.

One of the things that we heard at the Western Hemisphere Ministerial is the success we have achieved through NAFTA. And here, again, is a good example of getting government out of the way. If you remove the restrictions on trade, as was done through this North American Free Trade Agreement, you've seen trade with our largest international trade partner, Canada, since 1994, grow by 50 percent, and our trade with our second, now our second largest trading partner, Mexico, grow by 72 percent.

So tremendous growth in trade with our two adjacent partners, in part, because of the removal of restrictions. And we are hopeful, in the not too distant future, we will see a further implementation of certain provisions in NAFTA that will open the doors for even greater efficiency.

And what George and I, and Rich and others, are looking forward to is, as we deploy the \$700 million that was included in this borders and corridors program, advance technological solutions that will improve the efficiency of the border crossing itself.

I think I would be remiss in not addressing how important the passage of TEA-21 will be to improving efficiency here in the United States. Let me describe three ways in which I think it will help.

It will improve system connections, it will improve system capacity, and it will improve system efficiency. Let me touch on that for a second.

The first thing that matters the most is the money. You can do a lot with rhetoric, you can do a lot with regulations, you can do a lot with exhortation. But if we ship your resources, dollars and cents, hard cold cash, you can do a lot with that, a lot more.

And so \$198 billion guaranteed investment into our surface transportation system is what Congress achieved this last year. That is going to be the legacy of this Congress, not some of the other stuff you are talking about.

The most important legislation this Congress passed was the Surface Transportation Act that improved highway, improved transit, and improved safety. But it was \$198 billion in some of our key resources, whether it is preserving the interstate, expanding the national highway system, or giving local governments, through the Surface Transportation and CMAC systems, the ability to build more capacity.

If you look at the tremendous growth that has taken place in the south and west over the last 30 years, and look at the growth that is coming, there are many, many parts, major parts, metro areas in the south and west that are desperate for additional capacity.

And this bill will give them the ability to add capacity to the highway system. Just as importantly, if you look at other parts of the United States, the Midwest and the Northeast, where many of your systems are wearing out, it will give those states incredible resources to restore and preserve the facilities that they have in place, an incredible investment that is vital to moving people and freight throughout America.

So the ability to expand and preserve capacity is part of the bargain. But just as importantly, and probably more strategically, and that is one of the missions of our office, is to encourage states and localities to invest where possible in better connections, because you will get a certain bang for your buck if you invest in additional lane mile of road capacity.

If you are at a dock side, and you can provide a bridge overpass that allows freight trains to move at a greater speed and frequency, or provide a good on-ramp for trucks coming off of a port, you are going to have a major impact on the competitiveness of that port, and that economic region, and improve the efficiency of the entire system.

So better connections to our key facilities, to rail terminals, to port facilities gives tremendous return on investment. And one of the things that we will be doing, have been doing, and will be doing more of, is working with metropolitan planning organizations and states to get them to target more investment on these intermodal connectors.

And let me mention that Congress mandated that the Federal Highway Administration initiate an intermodal connector study to our national highway system.

In fact, FHWA anticipated that need, and started that work six months before Congress mandated it. It is under way, and we think we will wind up documenting whether it is at port-side, or you name the connector, it will give us a blueprint for many of the capital investments to improve connections over time.

The third way that we think that this law gives us additional means to achieve efficiencies in our system is to improve system efficiency. And this is through the use of greater emphasis on operations, and technology investments, especially.

If you look at the opportunities to improve the efficiency of truck movement in America, one of the classic ways that it is happening all up and down the eastern corridor, and I believe it will take place in Texas and Oklahoma, and some of the areas that have a lot of toll facilities, the easy

toll passes that now a truck transponder on his windshield, can go through a toll booth without stopping, this is a tremendous advance.

It improves the quality of our air, because it reduces emissions. But just as importantly it improves the bottom line and ability of truckers to move through the Northeast, and up and down the East Coast, much more efficiently without waiting at toll booths.

So the ability for fast toll payment, the ability to weigh a truck in motion without having to stop to inspect it, to make sure it meets standards, and only check the bad players, to be selective in our enforcement system, I think that is an improvement, and on and on.

Our CVO and our C Vision Advanced Technology applied to our motor carrier industry offers tremendous advances in efficiency, and we look forward to seeing those brought on line.

And then the final area I wanted to mention, again, when we approach border crossing efficiency. Some of the smart card technology, and the work that Rich Biter and my office is doing with Treasury and Customs, we think over time will bear great benefits at the U.S. and Canadian borders, and then those same technologies, we think, ultimately can apply to our ports in processing international cargo from Europe, from Asia, from South America, and other destinations.

The final thing I wanted to mention is that after seeing the Secretary make a very productive trip to Africa, earlier this year, and having seen him lead the Western Hemisphere Transport Ministers Conference this week, we are quite optimistic about the opportunities ahead. I was always optimistic in dealing with our long-established trading partners in Europe, because of the technologies that you are developing, parallel to the ones that we are working on.

There is, I think, growing consensus on harmonization of approach. But what I heard in New Orleans this week is, I think, grounds for great optimism, that the 400 million who are engaged in the North American Free Trade area, may soon be joined by the additional market of 400 million from Mexico, and this next set of trading partners, the tremendous economies of Brazil, Argentina, Chile, the Caribbean, the rest of Central and South America.

We, of course, have to get past the tragic loss that Hurricane Mitch worked on Central America, re-establish the Pan-American highway, re-establish the bridge and road systems throughout Central America, which were virtually decimated.

And for the U.S. construction industry, the World Bank, the Inter-American Development Bank, and for all of us, I think this is going to be an amazing challenge over the next five years or so.

But the democracies that are emerging, the economies that are emerging in the western hemisphere, in Africa, and throughout the world, Asians got the flu, but they will be back.

I think the flourishing world marketplace is grounds for optimism. The challenge that we are going to have is to make sure that the transport systems that all of us are engaged in, that we in the public sector can make the strategic investments and the strategic policy decisions that will open the door for the private sector to make the productivity gains, and pass on those gains to our economies and benefit the people that we represent.

So thank you, Max, for the opportunity to come by and speak. And I wish you the rest of the afternoon for a great conference. Thank you.

MODERATOR SCHACKNIES: Thank you very much. Why don't I turn over the floor to Joedy Cambridge, to start the next session. And has been our practice in the past, you just have to introduce yourself, and the purpose of TRB.

Human Resource Implications of Changes in Global Logistics Practices

MS. CAMBRIDGE: Good afternoon. The loyal few have stuck around after lunch today, right?

I'm Joedy Cambridge. I'm the Marine and Intermodal Specialist with the Transportation Research Board. And for those of you who may not be too familiar with TRB, the mission of TRB is to promote innovation and progress in transportation by stimulating and conducting research, facilitating the dissemination of research, and of information, and encouraging the implementation of research results.

TRB carries out its mission through the combined efforts of more than 3,000 volunteers who serve by appointment on more than 200 standing committees, taskforces, and study panels, which work with the TRB staff, to put together programs for our annual meeting.

We also do a number of specialty conferences and workshops, and we have one coming up within the early year 2000 on issues relating to freight intermodalism, and I'm hoping to see many of the same faces here, not only as participants, but also as speakers at that particular event.

We also prepare and distribute a broad range of publications, including peer review research papers, policy studies, cooperative research project reports, proceedings, periodicals, and research need circulars.

And you will see an abbreviated list of selected publications published by TRB in the area of freight and intermodal that is included in your notebook.

While the traditional focus of TRB has been on domestic transportation, particularly highway research, in fact TRB began more than 75 years ago as the Highway Research Board. The organization has continued to broaden its scope, particularly with respect to intermodalism and logistics, as well as marine transportation, aviation, which is something I wish we could have heard more about in the course of these last two days, as well as the scope of our international activities.

One aspect of intermodal transportation and logistics that has garnered considerable attention recently, within TRB, is the human resource implications of intermodalism and global logistics, in particular the education and training needs related to technology, advanced logistics, information systems, planning, and management.

At a recent TRB conference that I think many of you attended back in November of '97, speakers stressed this point. Joni Casey of IANA noted that, while technology is a driving force in the industry, we also clearly need to focus attention on human resource needs. People are absolutely the most important and valuable asset of any company.

Ed Wytking from the transportation trades department of the AFL-CIO stated that labor is the key foundation for the success of intermodal transportation, and one of the significant challenges is transferring skills to accomplish the seamlessness that industry and shippers demand.

Jeff Crowe of Landstar systems pointed out the need to educate people to look at the system as providing a service that moves goods from origin to destination.

And Chuck Raymond of Sea-Land stressed the need for skills and knowledge to effectively carry out customer focused supply chain management.

Industry change, whether it be a result of technology, downsizing, or process, is having, and will continue to have, a significant effect on the future workforce, particularly in the mix of skills required to perform the job that needs to be done.

The conference findings emphasized that education and training are key to ensuring a work force that can adapt to, and keep pace with, changes in the global logistics practices.

Specifically there needs to be a broader appreciation and understanding of the important relationship between transportation and the functioning of a global economy.

There needs to be a systems perspective for transportation, recognizing transportation needs from origin to destination, the entire supply chain, and the important linkages to the way the global economy functions.

Thirdly, we need to prepare people to accept and manage technology, and to understand the impact that technology has within their workplace and their organization.

With that as a preface, I want to now turn to the panelists who will speak to these issues based on their experiences and perceptions. And in the interest of time, my introductions of each individual will be very brief.

We will first hear from Lana Batts, who is well known to many of you here, and is a veteran of the U.S. trucking industry, and currently serves as President of the Truck Load Carriers Association, which represents the long-haul truck load carriers, the fastest growing segment of the transportation industry.

And if there is anyone that can wake us up after lunch, it is Lana.

MS. BATTS: One always worries when you are asked to come speak, because they want you to wake people up after lunch. That is also the same problem when they want you to be the last speaker before a golf game. Particularly in my industry you never want to be the guy that is standing between them and a golf club.

It really is a pleasure for me to be here today. I know you've had a lot of conversations in terms of where global freight is going, what is happening in the United States, certainly from the comments that Don Schneider gave you yesterday. What you find, for example, is that within the U.S. transportation industry we are looking at some tremendous growth factors over the next 10 years, and basically about a 22 percent increase in the amount of freight that is going to be available for all the modes.

The good news for trucking is that our percentage of that total transportation freight continues to grow, and in terms of tons, by the year 2006 we are going to be carrying about 56 percent of all of the tons.

Perhaps more importantly is how do you get paid for hauling those tons, and we are going to be hauling about 82 percent of all of the freight revenue dollar that is available.

So that when you, in fact, look at who is left, the railroads end up with less than 6.5 percent, air cargo was at 5.4 percent, rapidly approaching the percentage of revenue that the railroads are getting.

And intermodal, which seems to be everybody's love child out there, is in fact only going to have 1.6 percent of all the revenues.

So when you look at all these things you kind of sit there and say, gee that is great, you are representing the trucking industry, a particular segment of the trucking industry, truckload carriers, what is your biggest problem?

My biggest problem is I don't know if we are going to have the drivers to haul the freight. It is a huge problem. It is a problem that was identified about five years ago, as we started to look at the demographics. The problem has become greater all the same.

Between now and the year 2000 we are going to need 10 percent more drivers than we have today. To give you a sense of what that means is we are looking today for 80,000 people. I could employ, in my segment alone, 60,000 new drivers today, if I could find them.

Now, that is a pretty frightening thought, when you really look that we are the fastest growing mode, that we are going to be hauling 56 percent of all of the freight, and we are going to be carrying 82 percent of all of the revenues.

And it is interesting because the drivers that we are looking for, the starting salary is \$26,000 a year. In fact, I think, when the numbers come through this year it is going to be closer to \$30,000, that within a year those drivers should be making \$40 to 45,000 a year, and this is on 8 to 10 weeks' worth of training.

I daresay you cannot find a profession in the United States today, where you can be making that kind of money on 8, to 10, to 12 weeks' worth of training.

Now there is some problem when you try to find those drivers, obviously. First of all, they must be drug and alcohol free. Number two, they have to be English speaking, be able to read and understand English, by DOT regulations. They have to now be computer literate, because in fact, in the truckload segment of the industry, 80 percent of our trucks are already computer keyboard equipped with satellite communications. You have the Qualcomm people here today, that is driving that whole function.

And so the concept that has historically been around the U.S. trucking industry, is that if you couldn't do anything else, you could always be a truck driver, is no longer true. It is no longer true.

So, therefore, we have to figure out how to attract and how to retain drivers. Because, in fact, today while we lead in terms of new drivers, to fill the gap of those who have left the industry, or because of new freight, I'm actually looking for 400,000 new drivers. We have a huge turnover problem of guys entering and exiting the industry. We can get them in, but we can't seem to keep them.

So we are working on four fronts to try to attract and retain those drivers. The first is significantly increasing the pay. It was about a year and a half ago at this time, when in fact one of the largest freight transportation companies in the United States increased their driver pay 33 percent. That was not spread over five years, eight years, 10 years, that was on February 28th the pay went up 33 percent.

Guess what happened to the rest of the industry? The pay also went up. And it is going to continue to go up. My sense is that by the end of 1999 the average truckload driver is going to be making close to \$45,000 a year.

Today, the non-union truck load drivers make more than the union drivers. Now, that will blow your mind, but that is what the shortage is doing in the largest, fastest growing segment. In fact, our drivers make more than union drivers.

The second thing we have to do is we have to fundamentally change the working conditions in which these people operate. The concept is if you are going to spend six weeks on the road eating chicken fried steak, the joy of using public restrooms has to change. We don't know how to do that, but we are working on it.

In fact, what we have done, over the last five years, is take that six weeks on the road and drop it down to about 12 days. There is definitely a one to one relationship for the amount of time on the road and your turnover ratio.

The third thing we have to do is improve the image of the trucker, the truck driver, so that it becomes a profession.

And, finally, what I was asked to talk to, today, is we have to improve the training and the training opportunities. If one wants to view a profession as a profession, then there must be some kind of training in order to get into that profession. At least that is what all the educators tell me.

Now, it is interesting, if you look at truck driving today, that there are no minimum training requirements. One must have a commercial driver's license. Anyone in this room, halfway intelligent, I can take you to a four-day commercial driver's school, and we can get you a commercial truck driving license. That does not mean you are a truck driver, and clearly you would not want to share with road with anyone who went to a four-day school.

The U.S. Department of Transportation currently has an outstanding rulemaking which is looking at the question of mandatory entry level driver training. They asked three very interesting questions in the rulemaking.

One was is there currently adequate training? The answer was no. Two, would it be in the public interest if there was adequate training? The answer obviously is yes. And, third, was whether the cost of such mandatory training would outweigh the benefits. That they said yes to, but there has been a lot of heated debate within the industry as to whether in fact the cost benefit analysis is correct.

You have to ask the question of who is going to do the training, who is then going to monitor the trainers, and who is going to make sure that the drivers learn what they have to do?

One of the other reasons I think I got invited here today is that I also run another association called the Professional Truck Driver Institute. It used to be called the Professional Truck Driver Institute of America. We dropped the "of America" because we now have Canadian and Mexican people who are interested in our program.

I tried to make it the Professional Truck Driver Institute of the Americas, but I couldn't quite sell that, so I have to change all the logos and everything.

But what we try to do within PTDIA was to ask the question of entry level truck driver training and say, look, the first thing you have to do is if you want to do any training programs, and I don't care what mode it is in, you have to involve the people who have a stake in quality training programs.

Then you have to identify what the value added is that they get from that training, and then you finally have to come along and quantify what that value added is. If you can do all of those three things, then it is pretty easy to establish some kind of a training program.

So let me give you an example. What we did, within the Professional Truck Driving Institute of America, which certifies entry level truck driver training programs, we actually go out, we actually look at schools, we take an educational specialist, we take a trucking industry safety specialist, and we go out and we spend two days with those truck driver training schools after they've sent me a huge notebook of their information.

But in order to get to that point, what we, in fact, said was, we brought in a group of stakeholders, the truck drivers, and said what kinds of skills, and what kind of knowledge do you have to have in order to be a truck driver?

We didn't ask the schools that question, we didn't ask DOT that question, we didn't ask the trucking companies that question. We asked the guys that are actually on the road, who are sharing the road with brand new truck drivers. What do you need to know, what do you need to be able to do, and how well do you need to be able to do it?

Then we invited in the schools and we said, okay, if this is the skill standard you have to have, then how do you teach those skill standards?

Then we also included trucking company executives and said, what is it that you want to get out of value added? And what you found, for example, is that the trucking companies wanted to increase safety, they wanted to reduce their training costs. In essence, they wanted to make sure their training costs were more efficient. They wanted to add professionalism to trucking as a profession, and they wanted to minimize their legal liability, because in our litigious society today, a lot of people ask, where do you eventually get training?

We also included insurance companies that have a stake in driver training. And we asked them, what do you want out of it? And they said, we want to reduce our costs, or losses, because we insure not only trucking companies, but we also insure truck driver training schools.

We asked the schools what is it that you get out of this program? And what we found was that the schools wanted to minimize their legal liability. They wanted to differentiate themselves from so-called diploma mills. They wanted to increase their ability to get federal government funding.

We also, then, asked the regulatory agencies. It was a very interesting thing. When we asked regulatory agencies, why are you interested in training, we found three different answers. That shouldn't really surprise us, but we found three different answers.

The Department of Transportation is interested in training because they believe the training will improve safety. Very logical value added.

We went to the Department of Labor and they could care less about safety. What the Department of Labor wanted to do was to figure out how they could take a lot of displaced workers,

or welfare to workfare workers, and have them become truck drivers at \$30,000 a year with eight weeks of training. They wanted to know, were these people going to be employed?

We went to the Department of Education and they wanted to know if we fund the training, are they going to pay back the loans?

Now, the interesting thing is, when you look at all of these value added, you find that none of them are the same, except in the instance that most people want to minimize the legal liability. I find it interesting that that is the overriding concern that everyone had.

So on the basis of that the Professional Truck Driver Institute has been able to go forward and establish three kinds of standards that are needed in any kind of training program that anyone has.

The first one is you have to have skill standards. Skill standards are what you need to know, what you need to be able to do, and how well you need to be able to do it. That is what training is all about.

To teach those skill standards, we established curriculum standards. We went from the old concept that you will teach, for example, backing for 4.35 hours, which is what some people said we ought to do, to a curriculum standard that says, at the end of the training this driver ought to be able to put a 53-foot trailer between two other 53-foot trailers that are 15 feet apart, and he ought to be able to do it within two minutes.

Now, it may take you 4.3 hours to teach that, it may take you 14.35 hours to teach that. But it is the skill you want to teach, you don't want to sit there and say, you have to teach it in 4.35 hours.

And then we wanted to have some standards to make sure the schools are teaching what they say they are teaching. Because if, in fact, you don't have a training standard that says you are going to teach backing in 4.35 hours, then you have to be able to go in and find out, in fact, are they teaching what they say they are teaching?

That is what the training for the trucking industry is at today. We now have the skill standards, the curriculum standards, and the certification standards. And we are now in the process of going out and certifying all entry level truck driver training programs.

We believe that there probably are 300 quality programs out there. I use the word quality because I think there are probably 1,500 programs out there, but they are less than 4-week programs.

If you don't start at least with a minimum of a four-week program, there is no way you can ever put the word quality in front of it.

So that is how we differentiated the market. We are in the process of going to those schools. The interesting thing you find with training programs in the United States, is that three major groups do that training. There are the community based colleges, like community schools somewhere out there, publicly funded. They tend to do a program for \$2,000, and they take 6 months to do it.

Proprietary schools will charge \$4,000. They tend to do it in 12 weeks. Carrier schools, trucking companies themselves, like Schneider, have their own programs. The numbers are all over the board as to what they want to do.

What we are trying to do is, however you do it, in the end, when you and I are out there sharing the road with the truck driver, we understand that is a quality driver, that he has had adequate training.

We are in the process of doing that. We started certifying schools about a year ago. We have 50 schools that are certified, and we have a long ways to go, but at least we started the process.

So that is the status of where we are. I have no clue as to what is going on in railroads or airlines, I really don't care. I do know what is going on in the trucking industry and we are very excited about where we are today.

Thank you very much.

MS. CAMBRIDGE: Thank you, Lana. Our next speaker is Leigh Boske, Associate Dean and Professor of Economics at the Lyndon B. Johnson School of Public Affairs at the University of Texas at Austin, where he focuses his teaching and research on national and international transport policy issues, the role of transportation and logistics in international trade and commerce, and other aspects of intermodal and multimodal transportation, as is evidenced in the report that he was kind enough to make available to all of us participants.

MR. BOSKE: Thank you, Joedy. I smiled when I saw that Lana Batts was being added at the last moment to this. Gee whiz, I've known her for probably 25 years, but Ellen Bassarski and I, at one time in the late '70s worked for something called the National Transportation Policy Study Commission, headed up by a gentleman named Bud Schuster, and we had a lot of talks with Lana at the time.

And the one thing you liked about Lana, you don't necessarily agree with her, but you never have to guess what is on her mind. So I just asked her now if she has mellowed any, and she said, why should I mellow? So I guess she has changed not too much.

I want to first begin by just giving the lay of the land, landscape, when it comes to education and transportation logistics, and then get out of the field of logistics, because I think there are a number of other forums, educational forums, that have nothing to do with logistics, that have to adapt to global events, etc.

And I think it is instructive that we can learn quite a few remedies for addressing this.

In the late '60s and early '70s, when I was a graduate student in transportation, we were hard put to try to find much information on it. This has truly been a growth industry for a variety of reasons, in terms of the degrees offered.

One picks up the *Journal of Commerce*, these days, the *Traffic World*, one sees a new program, the program du jour. The latest one that came to my attention was the University of Denver is advertising that it has the first of its kind in a master of science degree in intermodal transportation systems. So as one can see there is quite a bit of diversity around.

In terms of where the programs are being offered, civil engineering will probably lay the greatest claim to transportation related courses. Business schools, the logistics courses. One looks at the lay of the land, one can find any number of departments, or schools, that engage in this activity.

In terms of the range of courses being offered, just some of them, if you look, are being offered. One could add transportation economics courses, finance courses, structures, the laundry list could go on for three or four slides, at least.

In terms of the Internet, and looking at the web pages, there must be at least 30 or 40 that one could tap to look at where there are educational institutions. World-wide, in fact, in terms of the courses and the programs being offered, I'm going to offer them here, for those who want to find it for themselves, if they want to do a quick screen on it.

The Transportation Research Board has links. It is the only one that I was able to find that can give you transportation, the programs by continent: Africa, Australia, etc.

And I just drew up one for Cranfield University in Great Britain. One can pull down any number of aspects of their program, plus links to other programs.

In terms of the Council Logistics Management, they have course offerings listed there. I counted 111 schools that you can get information off of this.

For an example, every educational program that they list, one could find information on a contact name, the fax number, telephone number, which makes it convenient if you want to do follow up information for it. And what types of courses or programs being offered at the university, transportation, distribution, etc.

The TRB has just published the Conference Proceedings. It is quite a good report on trying to say what the issues are in terms of all this diversity being offered.

And some of the recommendations I just listed simply because I think they did a very thorough job, in terms of the transportation courses being offered.

Almost all the aspects that you see here, I think, one could find instances in other forums. And this is where I want to get out of the transportation arena.

As associate dean I'm the chief academic officer of the L. B. Johnson School of Public Affairs. And most of my faculty and students aren't interested in transportation at all. They are interested in foreign service, they are interested in international commerce, international finance, etc.

So a great part of my time is trying to figure out whether the curriculum is being relevant to what kind of umbrella organizations, or trade organizations, or undertaking programs that could be of assistance.

I just want to go through a number of loops. First domestically and then internationally. And what I'm going to suggest, although I'm saying this at the very beginning, that this is my opinion, and my opinion alone, for this.

I think one could find that most schools of business, schools of public affairs in an international arena and the domestic arena, offer activities that are directly relevant to the logistics and transportation arena.

I figured that since most of the people in this audience and all these forums would be addressing logistics and transportation in particular, it might be useful and instructive to see what else is out there in terms of the landscape.

The National Association of Schools of Public Affairs and Administration involve 240 U.S. schools of public policy and public affairs administration. They have many trade associations.

One of the trade associations is almost like the annual TRB conference where you give research reports. But NASPAA, in itself, is dedicated full time to looking at curriculum development, research, pedagogical techniques, etc.

It is an umbrella organization that only meets to talk about how you can bring in private industry and all the different stakeholders, and what different forms it uses to try to stay abreast of foreign developments.

One of the things that makes this useful is bringing in stakeholders. Only yesterday we heard Ed Emmett saying that he attends many of these international conferences, and he wishes someone would have told him that this conference in Trilog was taking place.

There are a number of ways in which NASPAA tries to deal with changes in curriculum. One of them is just plain taskforces for major events. In fact, I'm a member of the taskforce, the public service, and public education.

And what we try to do at any moment is try to tap in to the stakeholders, try to find what kind of educational requirements and skills are needed, what kind of promotion is needed, where the job markets are, etc.

In terms of the annual conference, I will show you, just in the last three years the different items that were at the National Conference for NASPAA, and you can make a judgment for yourself

whether we had an umbrella organization for transportation logistics, would this be relevant, would this be useful information to private industry, government agencies?

The electronic newsletter, and I want to add on electronic hallways in a moment, in my mind is the best advice I've seen for keeping people abreast, and I'll mention that in a moment.

I talked to Dr. Blonk, yesterday, about whether he would be interested in being invited to a TRB sponsored function on an international panel yesterday. He said, I go all the time to these events and, quite frankly, I'm just trying to find time to attend them all.

If you had an electronic hallway you could do that in real time, instantly, with everybody on ListSerts, rather than trying to attend the conference, or read the published proceedings on this.

Peer review and creditation. I'm not suggesting, at all, that every program with logistics and transportation be accredited somehow. In fact I like the diversity that is cropping up here, and I want to perpetuate the diversity.

But if there are some aspects of the curriculum for some schools where they want standardization, you could use an umbrella organization to do that.

The electronic hallway I like. This is something for schools of public policy, public affairs, and consortium members. It takes about \$1,500 per school to belong to an electronic hallway.

And anyone can tap. This can be a global hallway where we could tap case studies for logistics and transportations around the world, if we wanted to see what is happening in this arena.

But what I like the best about this are the ListSerts because any time anybody at any school of public policy wants to think of putting up a workshop, or experimenting somehow, you can have ListSerts involving faculty, ListSerts involving government officials, ListSerts involving the private industry, and you can have ListSerts involving students.

We have a ListServ where students all over the United States can talk to one another, without having faculty hearing in. So if they want to know, does all the braggadocio of a particular school live up to its reality, you could get a reality check right away on this.

And the ListSerts could be interconnected. So if Lana Batts, for example, wants to know if a particular training program, anywhere in the world, has any of the attributes similar to what she is setting up, you in real time can deal with the ListServ with any member who is an institution on that, and actually carry on day-to-day discussions on this.

We do that all the time. As associate dean I'm in connection with other associate deans to see if one, credit courses have worked out, or any other experiment or innovation that we are dealing with.

International programs that I want to go to. International programs in the United States really started in the 1960s. It started with the Harvard Business School, in reality.

And what we see, at the beginning of the 1960s, is just the United States exporting programs. In other words, going to different clients overseas, or different universities and saying this is how we do it, this is how you should do it, and just implement it, learn it. Harvard is here, the day is saved.

Most of the technical and regional umbrella establishments were confined to the Northeast. These were international programs that began with business, and they expanded to schools of public affairs.

Harvard really began by reaching out to different schools, and this is in 1960s, developing these types of networks. But basically they were a one-way network. This is Harvard being a consultant and advising it.

When you get to the 1980s and 1990s, they become two-way networks. In other words, there is an acknowledgment that universities and other places in the world have something to offer to Americans, believe it or not.

Key features of this. At the beginning it involved Harvard Business School faculty, Harvard case studies. But as it reached out to other schools, what we witnessed up to the present time, is that you have basically domestic faculty with a couple of international experts offering courses.

You did not see, at that point in time, a majority of faculty were internationally oriented and involved in programs.

Let me speed up through this. The developments that changed the whole landscape on this, first of all, were the falling of the Berlin Wall, multilateral trade agreements, the formation of regional trade blocks, privatization, deregulation. Much of what you have heard over this changed the dynamics in terms of the role of the public sector and the role of the private sector.

In terms of new opportunities for this, I see the opportunities to expand electronic newsletters and electronic hallways globally, where you have many, many variations of universities, where it is outreach, educational programs, technical assistance, and consulting. All of them trying to develop links, as we've seen the logistics institutions doing.

ASPIA is one umbrella organization for schools of international affairs in the United States, similar to NASPAA. But other umbrella groups can perform these functions. There is an International Associations of Schools and Institutes of Public Administration. There is a network of Eastern European schools.

Right now we are trying to develop, through NASPAA, schools of inter-American cooperation.

As for cross section of courses, when I look at the logistics courses, they are very, very specific to transportation and logistics. And while I see no need, at all, to have every school giving foreign languages, every logistics and transportation school involving a more global or broadened courses, I do think that there is some need to at least have some core groups of universities doing this. For example, if we went to a European university, we wouldn't be arguing in terms of international logistics where we need foreign languages.

That is not something that is even on the agenda for this. But I think what we need to do is broaden the education, and then allow some vehicle for specializing it. I'm going to give some examples in a moment of how that can be achieved.

The LBJ School of Public Affairs began dealing internationally, about 20 years ago, for international cooperative agreements.

At the beginning they were the typical exchange programs for, first, students, and then faculty. As it developed, it started dealing with sister city programs, and having cooperative agreements with chambers of commerce in different countries. Then we even had cooperative research projects, such as with China and the Yellow River Commission.

That evolved into full blown cooperative programs. I think if you are going to have a logistics and transportation program and you really want that to be in as many manifestations, help on an international arena, what you have to have, I believe, is a full course menu on this.

The Guatemala program, right now, is just our latest program at the LBJ School. The School of Law, and the LBJ School of Latin American Studies are trying to help the Guatemalan Congress modernize. And, basically, what we are trying to do is a network for Guatemalan universities. It is not something where Americans go down to try to institute what the Guatemalans should be doing.

What are we doing down there? Well, we are showing the Congress how to do budget analysis. We are trying to get together with Congress to have a legislative program, trying to design a master's degree in public affairs, trying to set up the Internet and computers.

The Guatemalan Congress, for example, does not have offices where their constituents are. They have no history of that, of reaching out, and outreach. So we are trying to design hot lines for them.

What this really is leading up to is just a full-blown network of having the Texas State Legislature, Guatemalan Legislature, local chambers of commerce, the academics, and students on both sides, trying to come up with cooperative program.

And in the long run I can see this being designed with the private sector in the international arena in different countries, when we are trying to see how cooperation works.

I'm going to quickly go through this, because we are not the lone school on this. The University of Minnesota is trying to do this with the network of universities in Poland.

The Kennedy School has just come up with the master's degree program in international development. And I only bring this up as an example of how you can begin by having a broad-based core education, and then going more specifically, in the second year, to specifics, as you can do, I think, and emulate for transportation logistics.

In terms of the Kennedy School, all foreign students, or any student in international development, are exposed to leadership programs, to programs in legislation, human rights, etc., in the first year. In the second year what we see is more specific areas, plus the opportunity to really begin to specialize in such areas as purchasing or logistics management.

Okay. I'm coming to the end, believe it or not. These recommendations should not be of any surprise by virtue of what I said. While I think accreditation has its place, I'm not looking for standardization in here. I think part of the great merit to seeing growth in logistics and transportation programs in American universities, are that universities do find their niches.

And we can have everything from universities whose programs could be in transportation accounting, that is their strength, to people who offer a full menu of things at the major universities.

In terms of an umbrella organization, I don't think that is very hard at all. Every other discipline that I know has done this. But it will take money to do this, for cooperation.

In other words, as I look at the TRB report, I can take no issue with much of what they are talking about in terms of needs. But what seems to be missing is a mechanism for full-blown coordination and instant information and retrieval.

Let me leave it at that. Thank you very much.

MS. CAMBRIDGE: Thank you, Leigh. Next we will hear from Gerhardt Muller, who is a recognized authority on intermodal transportation and has authored the most recent edition of IANA and INO Foundations Intermodal Transportation handbook. He is also on the faculty of the U.S. Merchant Marine Academy at King's Point, and serves as a senior associate at the Academy Center for Global Logistics. I'm also pleased to know that Gerhardt chairs the TRB standing committee on intermodal freight transportation.

MR. MULLER: Thank you very much. What I would like to present to you in the next few minutes, and keep in mind that I conduct classes, and those classes run 60 minutes, exactly 60 minutes, non-stop, and you listen to me very attentively, just like you are going to do now, but I'm not going to go 60 minutes.

I'd like to cover with you a subject of training and education that might be slightly different from the kind of programs that were just offered, namely one that involves a modular approach to training and education.

But before I do that, for background, the U.S. Merchant Marine Academy is part of the Maritime Administration, which again is part of the Department of Transportation.

We have several programs there, at the undergraduate program where I teach. Specifically, we have a program now in logistics and transportation, or intermodalism. And my second hat that I wear is I'm with the continued education department at King's Point, where we develop training programs that are anywhere from one to six weeks in length, and that is what I'm going to emphasize more in my presentation.

Just to give you an idea what I'm going to cover, I will talk to you a little bit as to what we see as the driving forces for what we see in terms of transportation educational programs.

We will look at the structure of the program, we will look at some of the goals and objectives, and courses and programs involved. We will look at some of the results that we have seen, and look at the critical success factors that we find are important to attract participants. And then what I call so what, what does this all mean to you, and how should you think about this in terms of your own needs?

The driving forces, as far as our program are concerned, essentially come down to three major elements, with the understanding, of course, that there are other issues out there.

Basically we focus in on what we call globalization, or facet changes in trading patterns. We look at new and emerging technologies. That is, both software and hardware, the software being information which is still in a revolutionary stage, as opposed to the hardware, which is perhaps considered more like the containers and the ships, that is an evolutionary pace.

And then deregulation, or if I could also use the term re-regulation. What goes around comes around, or comes around goes around. We find that if you look at history that, even though things will go one way with the era of regulation, or deregulation, they have a tendency to perhaps step backwards a little bit, or readjust themselves, given the changes that are taking place on the other two sides of that triangle.

All of this is having an impact on another triangle, which sort of fits inside those forces of change, namely service, level of services that are out there. The cost to provide those services, and the price that the users are willing to pay.

With that in mind we have approached, at the continuing education level, a segment of the industry that is divided in two parts. One is what we call decision makers, and the second is what we call technical operators.

Decision makers are those people who are principally in management, who are responsible for short-term and long-term decision making. And they look at their responsibilities from different perspectives, within different situations. There is a need for them to understand theory and reality. At the same time they have to be able to touch, feel, and move the kind of programs and projects that they are responsible for in a physical way.

And also we get them involved in workshops to solve problems that they actually have. For technical operators, although some of those issues that we talked about for decision makers are still

true, we also try to get more into the nitty gritty, or the details, particularly when we talk about upgrading specific skills.

And here we are talking about how to specifically market a certain type of intermodal operation, or a transportation system.

What we have done is with those two audiences in mind and, again, we are not competing with the Harvards, or the Northwestern Universities, or any other university out there. We are really looking at the hands-on approach.

We divided our program into two major components. One is your typical short courses, seminars where appropriate. For example, we have four times a year a one-week course on

intermodalism and operations. And we also have four courses a year that last two weeks on intermodalism and logistics management, primarily for the government or military people.

But the one that I think is most interesting, and it is something that you should consider in terms of your own development needs, whether they are domestic or international, is something that we call the modular program.

The modular program is one that takes place over one year. And the way this essentially works is that a group of students, up to 20 people, we try not to have more than 20, will join us at King's Point.

Now, again, you can modify that to any kind of a situation that fits your clientele and physical environment. But we have them meet at King's Point for two weeks. I give them a chance to meet each other, to get to know each other as classmates and so on. But also to sort of break into another way of looking at intermodal logistics management.

Then we focus in on two subjects. Let's say, for example, concept and administration. The students then go home, to wherever they came from, whether it is internationally or domestically, and they try over a two-month period to apply what they learned during that two-week course.

Then they return, either to King's Point, or to a location that, let's say for example, in Africa, where they all gather again. And for the first two days they talk about what went right, and what didn't go right when they tried to apply the elements that they learned during the first two weeks of that course.

Then we move on to two more subjects. For example, marketing and environmental issues, and then they go back home. So this process is repeated four or five times a year, over a year's time.

We also include, in that program, what we call training the trainers, so they could be part of that process of getting a better idea of how to convey the message with regard to the subjects that they are there for.

I'm just trying to sort of summarize this, because I know the clock is ticking.

The subjects, as an example, that we cover include intermodal logistics management concepts. We go down to the specifics of each of the modes, we look at some of the issues involved with niche marketing, which I believe is becoming more and more important, and we are looking at establishing courses that deal with training programs so that the message that they pick up they can carry back home.

The way these modules work, to give you an example, and this again is being broken down to decision makers and technical operators. You can see that by and large the decision makers do not take every one of those courses. There is no real need for them to do that.

What we do is we try to tailor to their specific needs. On the other hand we find that the technical operator should know basically all of the major issues, specially those skills that they need to apply once they return to their home base of operation.

What we anticipate, and what we see happening out of these programs are several results. One is that the participants have a better idea of what the systems approach is to intermodalism and logistics management.

In other words, they understand the big picture, how the pieces fit together, and how they connect in a continuous fashion.

Secondly they develop new training skills, skills that might touch upon communications. Communications not just with computers, but how to make a presentation like we are doing here today, or communications across the telephone, the protocol for negotiating a contract over a telephone, and so on.

We also look at improving familiarization with training for traditional emerging cargo special handling technology and systems. In other words, becoming more comfortable with the systems that are out there, so that when an issue arises, they can handle it much more smoothly.

We also want to improve their working knowledge of other sectors of intermodalism and logistics management, where they may not be involved every day, but once in a while, but so that again they understand what the big picture is about, so that when an emergency arises they have an idea how to deal with it, rather than just say, it is the other guy's problem.

And finally we hope to have, and gain, new insight and understanding of human working relationships. In other words, how do you deal with others, both within your culture and others, in terms of these issues?

Some of the critical success factors that we see coming out of this and, again, this is in from the students themselves, we try to make sure that we meet the needs of the students, what they say they wanted that we produce.

We look at some benchmarks in terms of whether we reach our goals in specific areas of training. We look at gaining support and cooperation from all the parties involved, which means not only at the middle level and the lower level, but the senior decision makers. Do they believe, do they support what we are talking about in terms of these programs?

And then finally lead up to follow-up education and training opportunities that might be available in other areas, or within our programs.

Let me just give you an example of what we are talking about. Not too long ago I was in Africa, and I was invited by a number of central West African nations, to help them think through how they could develop continuing education training programs as opposed to strictly academic programs.

And what we have set up is, with the cooperation of international governments and so on, is a program whereby we would bring in a group of 20 people to King's Point, go through the program, but more in terms of training the programs, rather than individuals for specific jobs once they return.

The idea is spread the good news, let other people learn what you have here. Of course, it is impossible to bring everybody over here, but if we have the right people going over there, it could very well work.

So what? What does this all mean? I think in a very big way it meets changing needs. Yes, there is a need for academic qualifications and background. We have to be able to think, we have to be able to solve problems.

But those issues change constantly, and with the right types of skills and training program, as we have developed, we are able to meet that objective. It is innovative. There are some programs

like this around the world, but we believe that this is now the beginning of a trend that could be established here in the United States by other institutions, other types of programs.

There are short-term benefits that come out of this. One is it reinforces what you've learned. Let's just take a moment here. Remember back in the days of high school or college, and you took a language course? Think back, how much of that skill did you remember one month after you left the course; how much did you retain six months after you left the course; how much do you remember now?

Well, that is the same thing we find with these programs, that by constantly reinforcing, through the modular approach, that the skills and lessons learned are constantly being reinforced.

And, secondly, there is the reinforcement of networking. It is rather amazing, I'm associated with the World Maritime University in Malmo, Sweden, which has only been in operation for 15 years.

And now, after 15 years, there is a network around the world of all those graduates. So that when there is a need for information or help, they pick up, they go through the alumni book, find a name, call that person up, can you help me? The answer is yes.

Well, that is the same thing we hope to achieve through these module programs.

And, finally, what all of this means is that it can be applied now. We don't have to wait another 5 to 10 years. These things are now in place, and we can run with them.

So just to summarize what we are talking about is something that is really nothing new, but perhaps we are too much inside the box, trying to solve issues, challenges, in a traditional way. Maybe once in a while we have to go outside that proverbial box, and look at it from another angle or position.

I thank you very much.

MS. CAMBRIDGE: Thank you, Gerhardt. Our final speaker will be Lou Thompson, who is the World Bank railways advisor, and he will be discussing the World Bank's participation in employee adjustment programs, and the handling of this process when making the transition from public to private management in developing countries.

MR. THOMPSON: I was struck by the difference between the emphasis in these discussions, and the emphasis that I'm going to have.

In thinking about this it occurs to me that it probably would have been better if I had gone first, because then you could see the difference between the end of the scale at which we are working, and the end of the scale and incredibly sophisticated flavor of these kinds of presentations when what you are talking about is polishing the diamond after it has been cut.

What I think I'm talking about is the effort to dig up the diamond in the first place. But this is not an issue irrelevant to you because what I'm talking about is the effort, if you wish logistics to operate properly, the effort that has to be expended when you cross the border of a developing country.

It is all very well and good to train, and refine, and polish the system on the sea, or on the developed country end. But if it fails at the border, then as you well know, the chain is really no stronger than its weakest link, and it gets rather weak when you hit customs and the operations on the other side of some of these borders.

So think of our effort, really, as being the stages that you go through in order to get the resources essentially correct, and essentially in the right place, so that you can then worry about a lot of these problems, which is how do we train at the second and the third degree.

What we find in many countries is that the first problem in establishing good transportation, not even to speak of good logistics, is that the resources, especially human resources are in the wrong place.

Now, this is not unique to developing countries. Lana will know that we have had exactly the same progression in the United States, where the total employment of the railroad industry in 1981 was about 500,000 people. Today it is less than 200,000 people, the traffic has gone up by 30 percent in that period of time. That 500 was one million at the end of World War II.

Well, the developing countries, and their railways, their ports, and to some extent their trucking systems, but they are a little different, are facing exactly the same kind of transition. How do you get labor deployed from a place where it isn't achieving very much to one where it is, and then how do you take that, the labor that is left, how do you make that labor more productive?

It is a different kind of question, but one as I said, which is vital, if you want to make the system work origin to destination.

The World Bank is very active in financing these kinds of human resource redeployments. We do it indirectly through broad programs for restructuring the economy, which happens to have elements for redeploying labor, or more and more recently we've actually done it directly, where we will lend to the governments to finance the transition, the relocation, if you want to call it, of labor.

What purposes do we do this for? Well, there are a series of different problems that we run into. I guess the preeminent one, for this discussion, is the restructuring of state enterprises prior to privatization.

As you are probably well aware the model of enterprises in most developing countries was the state runs, owns, does everything. This was not just the socialist developing countries where, of course, one expected that, but in many of the developing countries, even in the western hemisphere, the state owned almost everything, and the state operated almost everything.

And it is making this transition from state ownership to private ownership, or at least private operation, that we run into the first kind of problem of labor redeployment.

But there are also things like civil service reform, where the government agency itself, doing civil service kind of functions, needs to have the size of the labor force changed.

In some cases this involves an additional investment in the facilities, or fixing the roads, or the highways, or the ports, or the harbors, or the railways. In some cases it is purely a question of redeployment of labor.

We do not do this just to shut down a company, however. It is only done if it is in the process of making it more effective, or transferring it into the private sector operation.

What we are trying to do is find a fair solution. Many of the people that we are dealing with have their lives invested in these activities. They've been doing it since they were young, they really don't know anything else, there aren't the same kind of job opportunities.

I'm thinking right now that if Lana needs 60,000 truck drivers, the Chinese railway could help her, and then some. If we could only move it from one place, we could do it.

But you have to worry very much about the social issues and the negative impacts of these kinds of deployment programs. Again, the United States is well aware of this.

I don't know whether you know it or not, but U.S. law officially requires that a railway worker displaced by a merger, for example, is entitled to six years' wages. If Amtrak were downsized, the Amtrak worker is entitled to six years' wage protection.

So this is not a development phenomenon only that we are talking about.

We have a couple of examples in which this has actually been done now, and they may interest you. I'm going to be talking about the Brazilian railway, briefly, the Argentine railway briefly, and a little bit about the Mexican railway.

What I could say, with slightly different numbers, I could say the same thing about many other railways, many other ports, many other highway agencies, many other kinds of activities, where it is the same kind of problem.

We financed early retirement schemes. This is always the most popular and the easiest to do. Next, voluntary retirement schemes of one kind or the other. Then what is called retrenchment redundancy, whatever, payments and golden handshakes, you choose your phrase. But payments that help people by compensating them for what they are losing and helping them to find something else.

And then assistance for reintegrating displaced workers. Now, in a sense, this is what they have been talking about, which is retraining, outplacement, other kinds of things.

And, by the way, many many railway workers become truck drivers when they leave the railway, so we are creating our own competition. Again, Lana, let us know, we can find you some from either Mexico or Argentina.

These are the kinds of things that we do. But the emphasis, and I think the success, has been more on redundancy, retrenchment, and early retirement, than it has been on retraining, because that is the highest priority right now.

In this particular case what the Brazilian government chose to do, and we helped them, was pay the workers basically on the length of service that they had. If they had 20 years of service, roughly they got 20 months of wages, plus a few other statutory benefits; 10 years, 10 months, something roughly like that.

The total financing from the bank was about \$190 million, which was about half of what was actually paid. About 43 percent of the labor force was reduced.

This is a rough rule of thumb that you will find in many state enterprises in developing countries, parenthetically, and developed countries as well. When you actually privatize something you find that the number of employees needed is about half what the public sector has been employing.

There was some retraining, not as much as we expected it to be. There was a lot more early retirement than we expected. And the outplacement assistance was not really very effective at all. The problem is that most people, when they left, didn't want to do anything like what they had been doing, and the retraining programs are just not in place to help them.

The Argentine railway program was much larger, and I will show you some results from this. But in this sense, this part, the World Bank part, was \$300 million in one of the broad umbrella loans. The total cost of the program for the government was a billion dollars, a billion dollars to downsize or change the size of the labor force.

In the Argentine case the redundancy was about 80 percent of the labor force, and I will show you some actual figures on this, but it was a very large number.

Here and in Brazil the outcome was, I think, quite successful. Finally, in Mexico which has recently been completed, and you may be more aware of this, because the Mexican concessions were bought basically by U.S. and Mexican investors acting together.

And now, logistically at least, Mexico is much more like a link to the United States. It is much more like Canada is, than before.

In this case the government took quite a different approach. What they did was to take the workers and calculate the value to them of public employment, retirement program, stability, predictability, wages, and they calculated a number that was the liquidated value to the worker of having public secure employment, and they paid them.

After which they were then free to negotiate with the new concessionaires new terms and conditions of work.

I just wanted to give you a sense, in the real world, of how these things have worked. What you can see here is the traffic on the Argentine railway, especially the broad gauge part of the railway. And as you can see, after concessioning, traffic itself turned up very quickly.

What I've shown you here is traffic on the suburban passenger railways. Here we concessioned these to the private sector on the basis of how much do we have to pay you to operate it, rather than how much will you pay us for the privilege of operating it.

The net result is the same, and as you can see, the traffic climbed very, very quickly because the entrepreneurs ran the trains on time, and they ran them clean, and they ran them safe, and they got the equipment fixed, and they had everything operating.

Finally even the Metro in Buenos Aires was concessioned for private sector operation. Again on a how much do we have to pay you basis. But when you think about it, once you've completed that transaction the entrepreneur's incentives are exactly the same as if it was on how much will you pay me basis. Same behavior, same result.

Here is the labor force on the Argentine railway. And what you can see is that from just before concessioning, when the labor force was around 90,000 people, today it is around 15,000. And yet what I've just showed you is that output is up significantly.

Another way to put this is productivity on the railways. And as you can see, the change was rather rapid on the privatization or the concessioning period.

Finally, what I have here is the results of the Brazilian program. This, incidentally, is interim. The relative productivities will go up a lot more as the concessionaires take hold.

In summary I think that what you are seeing here is maybe the first stage of the shift in the developing countries toward the model that these people have been talking about, where you are at the other end of the scale, and you are talking about refining and training workers to do very sophisticated linkages to a transport chain that is increasingly integrated.

These activities are bringing the countries closer and closer to the point where I think they can start to link up to the chain. And I think, I firmly hope, I fervently hope that 5 or 10 years from now we will be having the same kind of discussions about training in Buenos Aires for the railway workers, or the railway executives that we've had here.

Thank you.

MS. CAMBRIDGE: Thank you, Lou. Can we take maybe five minutes for a few questions?

[QUESTION INAUDIBLE]

MR. MULLER: From the maritime sector, yes and no. Officers, yes, they have the opportunity of going through what we call the horse pipe, which are people who entered as deck hands and wipers, and they eventually sat for their licenses to go on to become officers aboard ships.

When we talk about the other modes I think we have similar systems. But I would like to suggest something to you, that we should be thinking more about in this country, that the Europeans are very good at.

And that is they have structured apprenticeship programs in different trades. And those programs are designed to bring people in who have a mixture of talents, or little talent. And then over a certified program through chambers of commerce, the industries themselves eventually produce people that may not necessarily work for the company that they trained for, but for the industry that they trained for.

An example, one of our sons was not exactly academically inclined. And we were fortunate enough to find him, through our family in Germany, a carpenter's apprenticeship program.

The question would be as a typical American would say, Why should a German carpenter master want to hire a young man whom he knows will eventually go back to the United States?

And the answer is, because the industry, the carpentry business, based on the masters, is that they say someday we are going to get somebody else's trained apprentice to help us develop a system, or an approach that maybe we are not thinking about.

My point is that I think that here in the United States we should look more closely at the idea of developing apprenticeship programs, internship programs. And I think that is beginning to develop, for example, what was being said here with the trucking industry.

Certainly we have it in the maritime industry. I cannot speak for the aviation industry as such, nor for the railroad industry. But we are getting there, but I don't think we are moving fast enough.

MS. BATTS: If I could follow up. I think what you are saying in trucking is because I'm looking at huge numbers, they are looking at smaller numbers. But I do think that Gerhardt hits on something.

One of the problems that we've had in transportation, particularly in trucking, is because the federal government says we can't get these people until they are 21.

Okay, so if you take somebody out of high school who really wants to be a truck driver, what does he or she do for three years? The reality is they end up in another profession and I don't get them, or they fail at two or three professions before we get them, and then you have to untrain them and start all over again.

That rule was established when the paradigm for trucking laws, and particularly when you look at deregulation, particularly my segment of the industry just exploded in terms of growth, the paradigm was, the workers were cheap, the workers were plentiful, and workers were educated.

And by educated I mean they were coming out of the farm, or out of the military, they had driven an articulated vehicle, at least something bigger than a Honda station wagon, for God's sakes.

What we now have, labor is not cheap, it clearly is not plentiful, and it isn't educated. Not only has it never seen an articulated vehicle, they may or may not speak English, or have the kinds of skills that we've been looking at.

So there has to be a total shift in how we approach it. Now, Julia and I were involved in this conference last fall. And I was the only one up there talking about blue collar workers. Everyone was talking about we need more masters in intermodalism.

I said, no, you don't. You have to figure out how to get truck drivers. And the problem when I talk is they all laughed. And I said, we are starting out at \$26,000 a year, at the end of the year you are going to be making \$40,000 a year, you are never going to be outplaced by a computer chip, and they laughed.

Now, the problem you have is that people in Washington think that everybody has to have a PhD. And when you go out and I try to talk truck driver training they view it as a dead end job, because you are never going to be CEO of the company.

Well, I will tell you, Don Schneider started out sweeping the floor shop. Jeff Crowe started out driving a truck. I've got more CEOs in my organization who started out driving a truck. It is not a dead end job, but we have to fundamentally change the way we view blue collar in this country.

And the problem with Washington, D.C., because what is it, 65 percent of everybody in this town has a degree, you think if you don't have a degree you are in a dead end job.

MR. BOSKE: Let me just say, in underdeveloped countries you can't generalize that way. When we were dealing with Mexico, for example, and the teamsters were saying the raw figures of how well we paid the truck drivers up in Mexico City, you really have to differentiate and go overseas where the truck drivers are involved in international trade, whether they are dealing with American companies, or European companies, or whether they are pick up and delivery in Mexico City.

If you are involved in international trade they tend to be better educated, because they tend to know the U.S. language, the English language when they come over the border.

So when you are talking about driver needs in different countries, you have to ask specifically what it is they are doing.

MR. KOPICKI: I wonder if the panel could comment on the factors including education, that seemed to work in creating not big transportation opportunities, but small transportation opportunities new enterprises, new services.

Is this an industry that seems to cluster and grow around some center? What do we know about developing skills and launching business and putting people to work? I would like to hear your views on this issue.

MS. CAMBRIDGE: I would refer you to the proceedings from our conference, because Jeff Crowe had a lot to say about that, the entrepreneurial spirit lives in the trucking industry. I don't know if Lana has any comments on that.

MS. BATTS: Certainly trucking is an easy industry to get into. And everybody who drives a truck, as he is sitting there going mile after mile, is figuring out how he can do it cheaper than his boss. And in fact they do.

And what we found, because there is such a labor shortage in trucking, historically, what trucking companies wanted to do they said, I either want to have employee drivers, not necessarily union, God forbid, but employee drivers, or I want independent contractors, owner operators.

Because, in fact, there is such a driver shortage now, what the trucking companies are saying, you can be anything you want to be, just come to work for me. And they are setting up these independent contractors.

Every one of those independent contractors dreams about not only owning his own truck, but owning five, or six, or seven of those trucks. And in fact, they grow.

And where my growth comes in my membership, is the guy eventually gets 10 or 15 trucks, discovers I'm a trucking company, I'm no longer an independent contractor, and I have to wait for him to get in.

But in our industry, because it is such a low entry barrier truck load, I mean, for \$5,000 you can buy a truck, and you will get hired, can't use the word hired, but you can be retained to come and drive for that company.

So my segment of the industry is probably unlike any of the others, because the economic barrier to entry is so low in terms of dollar amounts that it is very easy to become an entrepreneur. I can just go down through the list of carrier after carrier. The guy started out as a truck driver, then bought his own truck, and now he has a \$15 or \$20 million company, or he is sitting there like Jeff Crowe, he has \$3.7 billion company. Ten years ago was driving trucks for North American Van Lines; today he has a \$20 million company. And the same things are happening in Mexico, because all of those guys are down in Mexico, and they are doing exactly the same thing there, and I suspect that is where the growth is.

And you are absolutely correct. I have a school that is getting ready to get certified in Mexico City.

MR. THOMPSON: I just wanted to add logistics isn't just trucking, it is restructuring, mainly through small enterprises and making them grow.

The enemy, or the problem in a lot of other modes, is the structure of the industry. If the industry is set up as a single national monopoly, entrepreneurial activity kind of dissipates.

But if you break it down into constituent parts, you create the opportunity for smaller clients, if not individuals, to get involved.

Another observation I would make is that there is a lot more money in developing countries than you might realize. Just because they have poor people doesn't mean they don't have rich people. It doesn't mean they don't have very large conglomerations of capital. If the activity is possible and it makes sense.

So a combination of trying to break the structure down so that smaller groups, at least, can get involved, helps a lot. And structuring the industry so that people can make money is the real attractor to almost any kind of opportunity.

Performance Measures, Benchmarking, and Data Requirements in Global Logistics

MR. KNISELY: Good afternoon. My name is Robert Knisely, I'm the Deputy Director of the Bureau of Transportation Statistics at the U.S. Department of Transportation.

The Bureau of Transportation Statistics had its sixth anniversary this week. We were created under the ISTEA legislation, Intermodal Surface Transportation Efficiency Act of 1991.

At that time we received \$90 million in funding. We are the newest of the national statistical agencies in the United States. We were just reauthorized, this last June, in the TEA-21 legislation, at a level of \$186 million for the next six years.

I recommend that if you have an interest in what we are doing that you check our website www.bts.gov.

We have tried, at BTS, to concern ourselves with customer needs, as is the fashion. I'm told that yesterday and today a lot of large numbers were used, and I will just use a couple.

If the GDP of the United States is perhaps \$7 trillion, and we, in transportation are, perhaps, 11 percent of our GDP, then that means decisions are being made every year in the United States that affect \$850 billion as a part of our GDP.

Obviously only a small part of those decisions are made by governments, most of them are made in the private sector, so we have begun to look increasingly at the decisions that are made in the private sector, because we believe that if we can increase the efficiency and effectiveness of the private sector, we will be serving the transportation community.

That has led us to the following observation, which is that if one is attempting to support data points, decision points in the public sector, where infrastructure investments are often made at 20- and 30-year intervals, surveys done every 5 years are an effective means of providing multiple data points between decision points.

If, on the other hand, as the world increasingly speeds up, and as the private sector decision making is reflected in what we are doing, we need to be shifting to some other modality because surveys done every five years cannot be squeezed between the decision points of the private sector.

And we have begun to look to the logistics community as a source of information about what data we need to be trying to provide to the decision makers.

So I'm very happy to be at a conference addressing freight logistics issues. That is all of my commercial for the Bureau of Transportation Statistics, and we will go on to today's panel.

Our goal is very definitely to meet our time commitment, since that seems to be one of the goals of logistics.

The final remark that I would add of an administrative nature is if the members of the audience drop below the number of members of the panel, I think we will adjourn sine die.

Our first paper is on the challenge of freight forecasting and the need for harmonized data time series. As I look at the titles of the papers I'm called upon to think that we are hearing first on the need for data to forecast the future.

We will also hear from Xioanli Han on better data definitions in the first place, and also from Mr. Nolle on better data collection methodologies.

So we are talking around many aspects of improving freight logistics data. If time permits we will also hear from Alan Pisarski on a topic related to the data for today's analysis, as opposed to data for forecasting.

Bruce Lambert comes to us from DRI. He has a broad base of transportation experience, having been with the Port of Long Beach for a number of years, and also begun in the academic sector at the Louisiana State University.

Welcome, Mr. Lambert.

MR. LAMBERT: Thank you. I'm going to talk about what my company does. It is not a spiel, if you want to buy something from us that is fine. But the topic is basically what we do, so we like to think we still have some knowledge base in it.

Basically there is a challenge in terms of coming up with a trade forecast. This is just a little who we are, so you know what we do. We are, primarily, an economic research firm. The area that I'm in sells trade data. We do consulting on the side, but primarily it is a data sales group of international trade data.

Having said that, this is what we really want to hear, what is ahead. And we are coming here and we are planning infrastructure, you are planning development, you are planning on how you are going to pull your ships, you are looking at a shipping industry that is in a state of flux. There is now deregulation of tariff filings, and a whole host of other things.

And this is what people want to know: What is ahead? What is in it for me? How can I position my company? And that is what they are looking at forecast information to provide them with.

Just an example of how different people use it. When I was at the Port of Long Beach I was the port's market researcher, so I had to answer a lot of these questions myself. People are looking at what the potential market is, and how much cargo is moving in a corridor, how much cargo is being sourced from this location, how much cargo is moving to this country.

The Port of Long Beach has developed the Alameda Corridor with the Port of Los Angeles, looking at infrastructure and development, and trying to figure out ways that we could have funding, secure funding for the cargo that we saw coming. A lot of us are trying to understand the current market.

There is a lot of uncertainty as to what is going on in the short term because of the Asia crisis. People look at trade data, and trade forecast, and try to provide some insight in that.

And another way, again, as I mentioned earlier, of looking at vessels, or equipment issues, and things of that nature.

But here it is, the first challenge, data. When we can compare historical data, because all forecasts have to be based upon some historical data, there are really two main problems.

There are difficulties because of collection methods and because of the reporting formats and requirements.

Now, we focus on the data collecting. First of all, the data input is generally put in by either an automated computer program or a clerk typist making \$5 an hour. I mean, it is a crude generalization.

But if we think about how much emphasis we are putting upon trade data that was put in, in some cases as an afterthought, or as a requirement, or as a condition that they had to meet to just get something, get some paperwork moving.

Sometimes it can be a daunting task. And, of course, there is the problem of underreporting of trade figures. Again, some people allege the United States does not actually have a trade deficit because we so underreport our export flows.

Again, when you are looking at trying to balance equipment flows, and you have an underreporting problem with the data, you have to adjust for that.

Again, there are issues concerning data that are filed electronically, data that is filed by paper, who is going to input that, who is going to mark it to the data base that is coming in, who is going to check to see if there are data inherencies.

Again, there are some policy issues related to it. The government focus on this collection is to monitor or enforce trade laws. Then there is a different focus in collecting information for the sake of collecting information, for making transportation planning decisions.

I think sometimes we lose sight of the fact that the information we are basing our forecast on was not calculated, primarily, to develop trade forecasts, it was done for other reasons.

And, again, there are competing government requirements between different agencies as they monitor trade flows, as they are looking at different parameters on the commodity mix, or the documentation that is required.

And then there are always, updating, monitoring problems, cleaning the data. Basically, are the data reliably presented?

Again, data reporting as policy issues. Companies, nations may not want to report trade that they view as being politically sensitive. Like, for instance, after Apartheid there were suddenly a huge number of people who were trading with South Africa, that discovered South Africa on the map. But they were always trading with South Africa, they just trans-shipped the shipments or hid the shipments.

It is only when Apartheid went out that there was a huge influx of trade to South Africa. Again, they might want to protect a certain industry. The United States does not want to release information on a trade where there is only one shipper on the lane. They want to have multiple shippers before they release the commodity details.

So there are issues that go into play as to what government's role is. Again, most companies lack these things, modal detail, is it air, or gateway issue, or is it border crossing, whatever. They don't have shipper and carrier information.

Again, as a transportation planner, that is not so much looking at long-term forecast, but the short term. You don't have information that is going to help you drive your business decisions.

Again, another question that we get a lot of interest on, primarily in Europe, is how can we link trade data to intermodal or domestic trade flows, or European trade flows within the region?

Again, as a maritime planner, one of the major issues is volume measures. I mean, it is nice that you are handling so much dollars of trade, but what does that really look like? How many dollars does it take to fill up a truck?

I'd like to drive a truck full of dollars, but that is a different story.

But, again, most of the OECD nations report some volume in mostly metric tonnage information in their statistics. You notice the United States, however, does not report a lot of metric tons, but it reports a lot of units: number of cars, number of shoes. Again, some of it is based upon the quota system that we have in place, where we are monitoring trade in terms of legislative issues, or monitoring in terms of competitive issues.

So the focus, again, is on policies dictating how much information we do have to look at trade flows in terms of tonnage. Because cargo doesn't move in dollars, it moves in tons.

So, again, here is the forecast challenge. There are data problems that I've very briefly highlighted. Now we are going to the forecast.

The historical data base used in forecast. I'm going to show you later on an example of some trade data we got, and you will notice that there is a very significant difference between what country A reported and what country B reported.

Again, trade in maritime estimates differ; there are different components. Dollar-based trade is different than maritime trade; they are not the same.

Assumptions driving the forecast. Again, when you take your forecast you have to be aware of the updating of the forecast, and what is in the data.

Again, even though we get the data, even though it has maritime information on it, we still have to clean it. When I was at the Port of Long Beach, again, I did a lot of going through the U.S. Government numbers. There is apparently an understanding in the U.S. Government that if they didn't know where the ship went to, it went to Los Angeles.

And there is a property line that divides the two ports. But what we found, when we actually went through, and I did this the first time in 1995, and corrected which ships were in Los Angeles and which ships were in Long Beach, we suddenly had an \$11 billion jump in dollar-based trade. Our TEU numbers didn't change, it was just simply the way that the government was reporting what port the ship went to.

Again, 1995 was a very unstable year for ship mergers in the trans-Pacific. Basically it has been every year. But, you know, just simply a data point.

Now, if those ports were separated not so much by property line, but by greater distance, that can have a significant swing if you suddenly correct the data and \$11 billion showed up in one port, and \$11 billion are down in another port.

So, again, another basic assumption that we use is imports are generally better than exports. The reason being the majority of enforcement of trade is geared on imports; you collect your duties, you collect your customs fees. And that seems to be the case throughout the world.

Imports generally seem to be more consistently reported, and better reported. Again, different nations have different systems on how they collect the data, how they disseminate the data, what they do with it, and that leads to other differences that we have to reconcile when we go through to form a consistent basis of doing trade analysis.

And, again, the problems become more apparent as you get into greater and greater detail. You know, if you are looking at total trade levels you assume that the averages and the errors are going to somehow equal out.

And you get a very specific request, like we have a request right now that we are working on, on bleached paper being shipped. You know, that is a very specific product, and there is some data reconciliation that we have to go through, because it is such a very, very specific detailed request.

And then, again, even though it is maritime, and there is a tonnage number reported, we still find that we are having to go through and either recheck, or reverify if that tonnage number is accurate.

Just because it has a tonnage number reported doesn't mean it is actually a valid number.

And here is the example. We were doing a forecast and we put in some new data. We ran it through our forecast, and if you see a jump-off problem there? Which forecast would you rather use?

If you are a transportation planner, you know, that is one thing. If you are a salesman trying to get your CEO to send you out to Japan, that is a different pattern.

But simply one data point that is incorrect in the system can have wide variations on what your forecast is going to be. We've corrected it, though, just to let you know.

But just to give you an idea, one data point in the series can have a great swing on what your forecast is going to be.

Again, these are the countries that we have trade data for, and that problem that you saw with Japan and France is multiplied, because not only do we have OECD, we have a lot of non-OECD countries that are not as good at reporting trade data.

So we are constantly having to go through and clean up the data, clean up the data, clean up the data. There are actually more people cleaning up the data than actually looking at the data, I think. But that is just the purpose of anybody with a data base.

But then, again, there is another issue. A lot of people, rule of thumb, they will grab information from a newspaper or clipping, this or that, and they will assume, I want you to invest so many million or billion in this project, and I have a newspaper clipping that I'm going to use to justify investing this much money into my facility.

But, you know, trade in dollars is different than maritime trade. Again, is it naive to assume that there is 100 percent correlation? They are different concepts.

Again, when you look at dollar-based trade you might lose some of the mode, you might lose some of the equipment issues. And then, of course, a lot of people just use rule of thumb. If it is going to go up 6 percent, it is going to double, kind of just roll with the punches.

If you are going to forecast there is going to be variability, depending on what data points you are going to use. If your forecast is specifically rated to a transportation or infrastructure project, you need to have a forecast that has transportation components in it, and not dollar based components.

Not that you want to completely get rid of those and not use them, but you have to be aware that you need to have an element that reflects the actual transportation flows.

Again, just a little chart. We did a forecast last summer. We estimate that the loss to the entire world in trading commerce is \$1.2 trillion by the year 2010 from the contraction of the Asian markets over the long term.

Another thing about doing a forecast is the timing of when you did it, what you are assuming in your forecast. You may correct for your data, you may correct for these other things, but if you have a forecast, and you don't take into account the full market, your forecast could be obsolete by the time you actually publish it.

Again, there is little consistency between sources. When I was in Long Beach, we reported officially all of our tonnage in metric revenue tons. I don't know if anybody knows what a metric revenue ton is, but it is taking tonnage, and matching it against your tariff to figure out how much tonnage based tariff cargo you moved.

And so because our tariff is different than the Port of LA, LA had their own metric revenue tonnage information.

So people would say, well what did you officially do? Well, we did X. Well, how does that compare to Los Angeles, where it was Y? But the comparison was useless, because it was all based upon our tariff. But we had to officially release this kind of information.

So we are really digging into the data, and there are a lot of problems in the data. A lot of problems that, you know, if you could get your governments or your people who are filling out the paperwork to correct, it would make my life a lot easier. Please, please, talk to your people.

Because the solution is that global markets need global data. We are here, we are talking about financing, we are talking about these projects. But if you have bad data you are going to make bad assumptions.

If you are trying not to make an unwise business move, you need to have good data. And the need exists for reliable, timely, and accurate data.

I mean, if the data is wrong, but you get it the next day, it has no bearing, it has no use. And all the parties involved in this data piece have to be committed.

Again, if I'm a carrier, I'm committed. If I'm the customs officer, I'm committed. If I am a shipper, I have to be committed. It is not going to work if the paperwork that initially goes into the system has additional errors that have to be corrected.

And, again, governments must recognize the importance of this information. I mean, they are throwing funding left and right for infrastructure developments, but they also have to be aware that

what is driving the support. You go to a bank, you have to show them some numbers. There is a lot of money that is being invested on these numbers.

So the governments have to be aware that they are putting money in, and they are going to get money out if they can correct these systems.

MR. KNISELY: Thank you very much, Bruce. I was pleased to learn early that all forecasting must be based on some real data. I'm sure you meant that as a matter of theory. But it is definitely a good idea.

Your last point was certainly more germane to my life, which is that it sounds like you would say that the government should indeed fund more data collection. And as the head of the National Statistical Agency I could hardly disagree with that.

Our next speaker is Xioanli Han, who has a PhD from Boston University, and is someone I've had the pleasure of knowing for a number of years. Xioanli works with the Bureau of Transportation Statistics on a broad variety of issues, and will talk to you today about an effort which we have had underway to clarify some aspects of transportation within the national system of accounts transportation satellite account.

MR. HAN: I'm really astounded by the difference in terms of technology and excitement of the presentation at today's symposium.

I guess everybody remembers yesterday when our luncheon speaker, Mr. Don Schneider, told us what kind of technology the Navy uses in managing their logistics system.

Also what they can do with their trucks. They can almost pinpoint all their truck locations in a global system.

At this stage, at the Bureau of Transportation we are still trying to get better data, more accurate, more timely data. And compared to what Mr. Schneider talked about, we are really in a third world, and we've been in the United States

So today I want to give you a sense of how much we are lagging behind. A big lag exists between our customer demand for information and what our information system can provide

I want to talk about our new effort, a joint research project between the Bureau of Transportation Statistics and the Bureau of U.S. Department of Commerce.

I want to start by asking everybody here, what do you think the transportation contribution is to the U.S. economy, in terms of percentage? Anybody can give me a rough guess.

Actually at the beginning of this session Mr. Knisely already mentioned it. It is about 11 percent. But that is really U.S. GPD represented by transportation, because it not only includes transportation, it also includes transportation related goods and services.

For example, automobile manufacturing and also gasoline stations. But what we are talking about is part of the logistics system, as suppliers to the transportation service.

But when we talk about transportation itself, it is a service, okay? In our national account, transportation service contributes about 3 percent to the U.S. economy.

So this may hurt everybody's feelings here, because we all work in fields related to transportation activities. But we know this underestimates transportation contribution.

So to clarify the real contribution of transportation to the U.S. economy, we started this project.

We asked basic questions. How important is transportation as a provider of service, and as a creator of economic values? How important is transportation as a user of economic resources? And, also, how important is transportation to different segments of the economy? Basically we want to figure out transportation's relationship with other industries in the economy.

The last point is: How important is transportation's cost in the total cost of different commodities? We are frequently asked by the Office of Secretary of the U.S. Transportation and also by members of the Congress about these questions.

Based on the current national account system, we cannot answer these questions. That is what I'm saying, how far we are lagging behind in the demand for transportation related information.

We saw a national account system in terms of presenting transportation related information. The real problem is our economic classification system, because in our census of the system of national accounts, we use a standard industry classification system.

So within that system all the information is collected by, based on establishments. Establishments are economic units that perform economic activities.

So all the economic activity can be collected or based on establishments. And these establishments are classified into different industries.

And all these establishments can be classed in terms of function. They also can be classified into operating establishments, separate establishments, auxiliary establishments, and other establishments.

So transportation establishments also can be basically classified into these four categories.

Operating transportation establishments are owned by a transportation company, basically their parent company. Their primary economic activity is to provide transportation service.

And also they have a separate location. The third criterion is they have their own accounting system. Separate transportation establishments are those establishments that are owned by non-transportation firms.

For example, you know, in the Washington area, the Giant Food retail chain has a big trucking fleet. This trucking fleet has its own location. They are separate. And also they have separate accounting books.

So these kinds of establishments are different from their parent companies, because while they are doing transportation service, their holding company is a retail company. So we call these establishments a separate establishments.

Auxiliary establishments are those establishments that are owned by non-transportation companies. They don't have a separate location, but they have their own accounting books. So in a sense, in national accounts we emphasize, if we really want to get to their information, and their output and a value added employment, we can get that information.

The last transportation establishments are those that do transportation activity, but they are owned by non-transportation firms, they don't have a separate location, and they don't have their own accounting books.

So, in a sense, there are many of the Mom and Pop stores, they have their own trucks. So in that kind of trucking operating, we call them, they would be classified as other establishments.

So in our system of national accounts, for hire transportation, where you are including, theoretically, operating transportation establishments and separate establishments.

But, in practice, because the census has difficulty to really identify those separate establishments, in practice, only operating transportation establishments were counted as transportation industry.

Well, all the other establishments, their economic activity is to provide transportation service, but they are counted as non-transportation.

So like I said, the retail chain truck fleet, where we counted their output, where we counted as retail industry's output instead of transportation industry's output.

So this classification system really creates a problem in our statistical system, because very often our transportation statistics are in physical units, and it covers passengers, right? It covers the universe, we don't care who, what industry classification they are being classified into, but we really just counted their passenger, their activity levels, their passenger mouths.

So this equates what their economic output measures about our transportation industry, only partial. So, as I said, only part of the for-hire transportation industry's output was counted. So this created a big discrepancy.

Also the transportation statistics often are activity based, rather than industry based, and do not have industrial level details. So this is a problem.

Because of time I think I will go directly to our key findings.

So this compares transportation's contribution to U.S. GDP with other industries. In 1992, this another problem, we are still talking statistical system, because we are still talking yesterday's data in tomorrow.

So now this is the most recent data available to the transportation community, and about real, more accurate measures of transportation's contribution to the U.S. GDP, but it is already very old. The year is 1992.

So here we say, transportation contributed about \$313 billion to the U.S. GDP in 1992. So approximately 5 percent of U.S. GDP. Within this 5 percent, about 3½ percent is from for-hire transportation. That is including the trucking industry, air transportation, rail transportation. All the transportation services are included.

So for-hire truck, on a private trucking, itself, not national account, contributed almost 2 percent. So its makeup contributes \$121 billion to the U.S. GDP.

So here I give you another picture that compares transportation service as a whole, and in-house transportation with other industries. As we can see, the transportation industry, including in-house transportation, will be almost comparable to the health industry and the retail industry.

But in-house transportation alone will be bigger than education, and even bigger than the fastest growing industry, the computer industry.

The mode distribution, all the for-hire transportation together, that is railroad. The last one is the in-house transportation contribution to U.S. GDP. So compared to other for-hire modes, including for-hire trucking, they were much smaller than in-house transportation.

So, again, we see the underestimating of transportation as a contribution in the system of national accounts.

This one is my last one. It gives you a picture about the intensity of industry transportation presented to you in the current national accounting system. So we can say the manufacturing industry is the most transportation intensive sector.

But with in-house transportation included, we can say agriculture becomes the most transportation intensive, and construction becomes second.

One thing I want to emphasize is the service industry. The transportation intensity of the service industry, without counting in-house transportation, is very low. But when in-house transportation is counted, its intensity jumped up. It is getting close to the manufacturing industry.

One implication from this finding is that, although many scholars and economists are talking about how the role of transportation in the economy will diminish as our economy shifts from manufacturing toward service, this tells us that even as our economy becomes more service oriented, transportation's role will not diminish. Transportation will continue to play an important role in promoting our economy's future growth.

This ends my presentation.

MR. KNISELY: Thank you, Xioanli. There is a lot more to be learned from that study. And if you will come talk to Xioanli afterwards he can give you some of the references on where to find some of that information.

Our next speaker will talk about better data collection systems. This is Bill Nolle from the United States Department of Treasury, who after many years of Customs, has forgotten more than anybody else ever wanted to know about Customs, and is now off with ITDS, a most important endeavor.

MR. NOLLE: Thank you.

Let me talk to you about ITDS, the International Trade Data System, and what is it. Well, I'm going to go to a comment that Bruce made when he was giving his presentation. He said that different nations have different systems.

Well, it is worse than that, because each nation, itself, has different systems. And that is the problem with international trade reporting, in terms of enforcement, and compliance, and statistics.

ITDS is a federal government information technology initiative, and it is an integrated government wide system. Two very important terms. It is government, you will notice that. It doesn't say Customs, it doesn't say transportation, it doesn't say immigration. It is an integrated process, because that is what international trade is.

I'm about to, after having been with Customs for over 20 years, I'm about to commit an act of heresy. I usually make this statement and expect the walls to fall down.

But the fact is that Customs is not the center of the international trade universe. How about that one? That one is going to get reported down to the Reagan building, I can assure you.

But, really, the fact is that it involves a number of different federal trade agencies. In fact, there are over, or there may be, at least 104 agencies that are involved in international trade.

So ITDS is a government wide system, not owned, not operated by any one agency. It is totally electronic. It is used for the collection and dissemination of international trade data. In fact, we don't even have a piece of paper in ITDS. That is how firm we are about keeping it electronic.

Also, it is government that works better and costs less. This is a national performance review initiative out of the NPR.

So what is the current trade environment? You folks know this, but let's just go through it very quickly. It is complex and costly. Why? Because you have all these different reporting mechanisms to all these different government agencies.

You have either data, or paper, or both. So what we've done is we've automated, but we have the worst of both worlds. We have the worst of the automation, and we have the worst of the paper process.

And you have to give this to multiple federal trade agencies. You know what this is like. You have two very, very good pieces of commercial documentation. You have an, and you have a bill of lading that has all the information that the government needs.

Well, what happens? Customs says, yes, I know you have an invoice, but I don't want that, you have to put that on a Customs form. And Food and Drug says, you gave it to Customs on their form, but I don't want their form, you have to give it to me on my form. And this just multiplies, this just goes on and on.

Consequently the data is redundant. Ninety-plus percent of the information you give to the different federal trade agencies is the same. So why are we operating this way?

It is confusing import and export requirements. One of the things ITDS does is that it treats imports and exports the same. Why do we treat them differently? You know, 10,000 bumpers coming out of Mexico going to an auto plant in the United States are the same bumpers when they are in Mexico as they are in the United States. Yet we treat them differently, we require different systems, different data, different documentation. There is no reason for that. So let's try to pull this together.

Incompatible definitions of exchange methods. There is EDIFACT, there is ANSI, there are proprietary systems, we use all those, or some of those. The data is not well defined.

If you know Customs, I like to use this term ultimate consignee. Customs has never been able to define ultimate consignee. In fact, about six years ago they issued a *Federal Register*, and those were 17 different definitions for what the ultimate consignee is.

So is it any wonder that we don't know what is going on in international trade?

This places the burden on the government, because the government has to maintain all these individual systems. It places the burden on the trade, also, to submit the data. Costly and inefficient.

It creates congestion of ports. If you were to go to the Peace Bridge in Buffalo you will see a lot of trucks parked out in front of the Peace Bridge warehouse. The reason they are parked there is not because they are being examined. The reason they are parked there is because there is information needed to release it that they don't have. So they have to stop and park the truck, and schlep themselves into the broker, and then go into the warehouse to present the documentation. Eighty-five percent are just there for documentation and information purposes.

So if we can have the information, in hand, before arrival, we can eliminate a lot of that congestion.

And the agencies, it hinders their missions. Well, is the truck here for Customs, or is it going for Immigration, or is it going for Food and Drug? I don't know. Why are you here? Some drivers, if you look at them, they go wander around these complexes trying to figure out where they are supposed to go, they don't know.

And, consequently, one agency doesn't know what the other agency is doing. Again, different systems, different documents, so it gets in the way.

So we hope to facilitate and promote trade by going back to these problems in this environment, reducing the cost and burden. It is estimated, and I forget the exact figures, it is 3 to 5, or 5 to 8 percent of the cost of imported goods are directly attributable to providing the government with documentation and information.

No value added to the merchandise, whatsoever, just government stuff. It is time we put an end to that.

Enhance enforcement and compliance. This is the one that everyone gets all worried about. So if I had more information, you are going to stop more of my shipments? Probably not. To go back to the Buffalo example, the reason why they are stopped is because we don't have the information.

If we had the information we could probably release a lot more merchandise immediately, rather than requiring examination or any document review.

Improve the quality and timeliness of international trade data. You've heard that being said here several times. The data that, you know, the STR, the Special Trade Representative, goes to conduct a negotiation with a foreign government, and is using information that is six months old, and probably not accurate anyway.

If we could get more accurate and more timely information, it will be much better for the government.

So how will we meet the vision? Using standard commercial based data. You've got the invoice, you've got the bill of lading, let's use that. Why do we have to have it re-aggregated or reformatted to meet some government requirement that was in place 200 years ago? There is no reason for doing that any more.

And going out to businesses. Remember, Customs, for example, has been in place for 200 plus years. Some of those regulations are in place in that environment. Let's go to the business community, how do they operate, and how can the government fit in with that business operation?

Eliminate redundant and confusing processes. Let's treat imports and exports the same. Let the government share the data among its agencies, rather than having the trade community have separate reporting requirements to all the different ones.

Improve risk assessment. Give us the information and we will be able to do a better job, is what it comes down to.

Access to process requirements information. What that means is, people who try to import or export, and they get intimidated by it. It is too confusing.

As an example, I was doing a presentation in Canada, and I had to mail some materials up there. And I was doing one in Buffalo, and I was doing one in Canada. And I had to mail the Buffalo stuff to Buffalo, but I carried the stuff to Canada with me.

And our secretary said, why don't you mail it? I said, because I have to go through all that Customs stuff when I go into Canada, and I can't be bothered. And this is what trade is doing, it is too confusing, no one knows how to do it.

Well, if you have a standard way of doing business it should be easier to conduct international trade. Integrated electronic environment. Let's eliminate all these different proprietary systems, let's have one way of reporting to the government.

So what is ITDS going to do, is it just going to do the clearance process? No. It is going to do border operations. These are the agencies that are actually out there, Customs, Food and Drug, Agriculture, Immigration. The ones that touch and feel the merchandise, that is the border operations base.

Licensing and permitting. There are agencies, State Department, Agriculture Department, that work with those products also.

Statistics analysis policy and reporting that will handle that aspect of government. And that has nothing to do with the customs inspector releasing cargo, but it still is a critical piece of international trade.

Also trade promotion, so that we know what is coming in, we know what is going out, we know where there are opportunities to do this.

So how will it work? One, standardized and harmonized records for all federal trade agencies. It will come into ITDS on time, into the International Trade Data System, so that you won't have all that duplicate reporting, and it will be electronic.

ITDS will edit and validate that data, and then it will either distribute data to, or process data for, the trade agencies.

After processing this information ITDS will integrate the results into one record of the transaction, and provide responses to the trader regarding that, from one source. It doesn't happen now. You are getting something from Customs, you end up getting something from Food and Drug Administration, later, maybe. And something may come from Agriculture if they can find out where the transaction is.

Just very quickly, ITDS will use government standards for open system and hardware, centralized collection, the system of legal records, commercially based data messages, but I think the last one is the most important. Adhere to government security guidelines, which means encryption to protect the data, which also means protecting access to that data.

This does not mean that every trade agency will now have complete access to every single piece of information on a transaction, because there are laws governing what that agency can receive. They will only receive what they are legally entitled to.

And, likewise, anyone querying this system will only receive what they could. We would protect proprietary data.

So what have we done? We have been in existence for about three years now. We have conducted a survey of trade agency information requirements. We have a staff that has gone out and interviewed almost each of the 100 — not interviewed all of them — but we sent out surveys and questionnaires to all of the federal trade agencies, asking, what are your information requirements?

We have begun coding, in initial UN/EDIFACT. UN/EDIFACT is an international syntax for the transmission of data that is almost finished.

We have an ITDS design report, which we have done once, and revised. We have an implementation plan, and profiles for federal trade agencies.

We have had some conversations and outreach with the trade industry. We are conducting negotiations with foreign governments, both from Canada and Mexico under the NAFTA, G-7, and APEC.

And I just want to spend a little bit of time in the last. We conducted and evaluated the ITDS proof of concept called NATAP, the North American trade automation prototype. We've actually tried this already. We've actually put this out.

We all sit around, with all due respect, sessions like these are important, but we are talking, that is all we are doing, we are talking.

What we did, we got together with some like-minded individuals from Canada and Mexico and said, let's stop talking and let's do this. We did come up with a standardized data record that Canada, the United States, and Mexico agreed to use for the import and export and transit of merchandise within North America. We did that.

We employed technology such as transponder technology to identify the conveyances. Not only did these transponders identify the conveyances for all three governments' purposes, but they were also used for toll collection.

We tried using EDIFACT, so we've actually done some of these things.

Now, I'm not going to stand here and lie to you and say that this was absolutely wonderful, and it was perfect. It wasn't. There were problems with it, but at least we tried it. We tried it in a very limited environment, and we learned quite a bit from doing this.

And some of the things that we did in NATAP have been moved into ITDS with some improvements. As a matter of fact, we had such a standard data record, this is in my years within the government, we had a trade software package that was used for the receipt and the transmission of the data. It was designed by Canada, by Canada Customs, and it was used by the trade community in all three countries, and by the governments in all three countries for the transmission and receipt of data.

That is remarkable, that has never been accomplished anywhere. So did it work? You know, sort of. The transponders sort of work. The data does need to be refined, but at least we went out there and tried some things at some major crossing, Buffalo, Detroit, Laredo. So we have tried doing it.

I'm getting my signals here. You can go to our website.

There are some critical elements that you might want to take a look at in this website. Within the design report there is the executive summary, the concept of operations, a very detailed cost benefit analysis, and an implementation plan.

So it is a project that is still in the works, and we are still around, and still working toward this. Our implementation plan is to move ITDS in a pilot phase to the NATAP ports of Buffalo and Laredo. And that is scheduled for the end of this fiscal year, sometime around September.

But I would encourage you to just check out this website. There is more information about ITDS and about our plans for the future.

Thank you very much.

MR. KNISELY: I think that system is absolutely fascinating, and I want to go to the website and have a look.

Due to circumstances well within my control, we do have time for Alan Pisarski, who needs no further introduction, at least to a substantial, or at least vocal portion of our remaining audience.

DR. PISARSKI: You did say needs no, not deserves no, further introduction. I don't know about the rest of you, but I'm tired. The good news is I have no transparencies, and I have one sheet of paper. The bad news is that as my wife says, I get up in the middle of the night and walk down in the dark to the refrigerator, and open up that door, the light hits me, and I do 40 minutes, you know?

I just want to ruminate a little bit on some of the things I've heard, and some of their implications, I think, on the data side.

It makes me think back, I guess 25 years ago or so, there was a group that with great humility called themselves the Group of Experts in Transport Statistics, which met in Geneva, Switzerland, part of the United Nations, and I got to be the U.S. representative to that group.

And I raised with them, at that time, the need for better information on freight flows, and how do you do freight flow surveys. And I was politely told, most of the members were European, that that was no problem, you had this thing called the border, and every time something crossed the border you got all this really neat data, and the Europeans had no trouble whatsoever with keeping up with those flows, and they told me to go away.

So I stopped thinking about that. The United States had problems with that. The good news is that after a million years the United States has reinstated its commodity flow survey, and just apropos of that today, came the first draft of that work, the 1997 survey was released, and the Census Bureau and BTS conducted that, and put out preliminary product this morning.

Most of you were up at midnight waiting for it to be released.

But the interesting thing is, in the meantime, the Europeans have lost their ability to measure what is going on. They now have border free activities, and both the freight and the passenger side in Europe has lost that capacity, and now they are saying to us, Didn't we talk once about how to do a travel survey? Can you tell us how you do a freight survey?

And the Europeans are reinventing things like external travel surveys, where you stop people by the side of the road and ask them where they are going, and stop trucks by the side of the road, and they are trying to reinvent survey processes to get back at some of the things that we've been doing for a long time.

And I think what that leads us to is some questions, listening to the discussions of yesterday, and here today, questions about what can really public data collection do in this process.

I think what I was hearing was that there is this astonishing gulf between what the public data processes are doing and what the private side is doing. When you look at what Mr. Schneider is doing up there in Green Bay, I can't help but think that — and maybe this is wishful thinking— Bob and I have talked about this, that we are on the cusp of some real revolutionary change in the ways in which we collect data.

And some new mechanisms by which we can construct the processes. If you think of 100 companies like Schneider that one could kind of sum through that system, one could describe the

U.S. activity rather better than trying to mail out 800,000 questionnaires, as we did to establishments across America and asked them what they are up to.

And so the power there is extremely strong, but we still haven't captured that capability. I think what I'm trying to say is, I think we are getting close.

If you look at the public data collection processes, we can describe data flows with them, we can make some contribution to one of the big topics today, which is identifying world market corridors. The Europeans are talking about corridors very actively, the United States is talking about corridors. I think most regions of the world are interested in corridor delineation.

We can provide some input to investment data and to performance measurement. But, in fact, the kinds of demands that the private sector makes, the levels of detail that they require for marketing, the kinds of demands that the states make in the United States, on the system, I don't think we are ever going to be able to meet with public data sources.

And so we have to recognize the fact that there is a boundary here that we haven't quite overcome.

Government measures of freight flows are way too coarse, I think, compared to what many people are asking for. Our contribution to performance measurement now with the existing systems were, in fact, neither cost nor time logged in the measurement process, and yet somehow we are trying to construct performance measurement systems without either cost or time involved in them, and that is kind of a neat trick.

But I guess we can kind of hope that with some private/public cooperation mechanism, and some new technologies that I hope are just around the corner, we will be able to make some dramatic inroads.

I think that the commodity flow survey that we do in the United States draws more pain and grief to the OMB and complaints to the Census Bureau than anything else that the Census Bureau does.

So it is a real measure of the discomfort level that the industry feels for that.

The paper I have just produced, and I produced it just last night, so it is going to go into this book, and you can read it later, discusses the subject, and talks a little bit about performance measurement and my discomfort about dealing with the whole subject of performance measurement in this kind of an environment.

It talks about performance measurement of the system in both the passenger and the freight side, and compares the passenger and the freight sides, and where they have some relationship and some interesting characteristics that might be worth comparing.

I would just observe that a lot of my work these days is in evaluating countries' statistical systems, and looking at their ability to measure what crosses their borders, both passengers and freight, and making recommendations to their national accounts people on how they might better improve that.

And one of the things I've seen on the passenger side, that I haven't seen happen at all on the freight side, and maybe it is happening, and I don't know about it, is that there is much greater coherence, more and more on the passenger side.

The World Tourism Organization in Madrid, a United Nations Agency, has established definitions and standards and classification systems for measuring and describing statistical flows of people across borders. It is a very tight set of definitions now that are employed.

They've created mechanisms for data interchange. The United Nations Statistical Division has adopted these systems and has employed them. I'm not saying they are by any means perfect, but at least they have put into process the mechanisms by which we are going to be able to do this.

For instance, what Charlie was just talking about, the satellite account in the United States, which is one of the first in the world on the freight side, on passenger satellite accounts travel and tourism satellite accounts, there are probably a dozen in the world.

We are working now on a model with the United Nations, a model standard satellite account for tourism that will be standardized and employed throughout the world. It will be at a world conference this year to implement that; about 140 countries will be there to ratify the mechanism.

So what I'm suggesting to you is that I think that the passenger side is moving very quickly in some of these areas, and although the private side of the freight world, I think, is way ahead of the private side in the passenger world, the public sides are nowhere near close, I think we have a lot of catching up to do from the freight side in the public sector.

Let me just conclude with my concern about what it is that we think we are measuring when we measure this stuff.

Bob mentioned his agency was created by ISTEA. One of the things that Senator Moynihan said when they were working on ISTEA was the transportation industry was moribund, that highway productivity, trucking productivity was dismal, hopeless. Moribund was the word he used.

And I took exception to that, and took a look at it, and what we really found out was that the statistical system was moribund, not the trucking system. And that just the ability to measure what was going on in the dramatic changes in freight productivity, I think had been totally missed by the U.S. statistical system.

So government had just failed to recognize what was going on. We didn't even know what the true output was of transportation. We talk about tons, we talk about ton miles. Tom Donahue, now at the U.S. Chamber of Commerce, likes to use the term value miles, some of the dollars worth of stuff that gets moved.

We are not even quite sure how to express that, or how to describe that to people.

I think when we focus too much on the marketing side of the work, and on the public policy side of the input and the data needs we have. We don't recognize the fact that we simply need to describe what is going on better to the American public, and even to investors in the system, just to better understand the process.

One of the things that scares me in that was a word that I have heard used rather dramatically throughout this process, and these meetings, the word efficiency. And it is amazing how badly that word has been abused and used in these discussions.

I heard somebody yesterday, I won't mention it, but it was in the opening session, talk about how we could fix efficiency in talking about only 40 percent of the trucks were loaded in Europe, and that this was a terrible efficiency problem that could be fixed.

And that seemed, to me, to be a concept of efficiency that was really very, very skewed. Very often the word efficiency I think is abused. Whenever you hear that bigger trucks are more efficient, larger ocean-going tankers are more efficiency, transit is more efficiency, the hub system of airports is more efficiency, you have to ask for whom and for what.

Very often people become more efficient by off-loading their cost on to somebody else. We have big box things like Giant supermarkets, like Wal-Marts where, in fact, some of the freight movements is now the combination of this very large big box, and a very long trip length of the average person who goes to the supermarket, or the Wal-Mart to pick up the goods. But that freight component is not added into the calculation of efficiency.

And I think that is what is happening, very often, when we start to hear people talk about how we are going to become more efficient, they are simply moving part of the cost to somewhere else.

The big concern that I have is what I was hearing yesterday. They were talking about making the transportation system more "efficiency" at the expense of making industry less efficient.

In effect the shipper was going to become less efficient in order to make the transportation system more efficiency. And I suggest to you that that is a very dangerous process, and one that we really have to guard against when we are trying to make our system conceivably more efficiency.

MR. KNISELY: I think we just heard some caveats about efficiency. We also heard from Xioanli Han about how we need a better understanding of how we keep score, as well as the necessity for keeping score. And Bill Nolle told us that this would all be fine some time soon. Bruce said, sadly enough, that the data is still crummy out there today, and a lot of people have to put a lot of work into bringing it together.

QUESTION: Probably the biggest thing I notice in international trade statistics, is that when you go to international trade statistics, and you want something fairly expensive, it seems like it is the OECD and the UN that have such things, and there is no mode in those trade statistics, as I think you pointed out, Bruce. I think you were talking primarily about the OECD.

It would be a big benefit to everybody I know, looking at any kind of trade relationship, if the OECD would include mode, given that the stats aren't perfect and all of that.

This is particularly true, I think, in Asian trade, for example, where you've got a lot more flying, and a lot more of a lot of different kinds of commodities, some of which you wouldn't think would fly. That would be a tremendous help.

On the U.S. side of that same thing, if the Bureau of Transportation Statistics could prevail upon our brothers in Commerce, there is no reason, it seems to me, why they couldn't produce a level of four digit SITC trade, four or five digit, it wouldn't make any difference, and give you port level statistics.

In other words, the most common statistics that we produce in the United States is a CD-ROM every month which has what is now kind of a strange thing, because it is just an aggregation of statistics called the District. It used to be a physical working unit.

But we need those stats of air trade, or whatever, at the level of the port. And I can't see any confidential requirement at all. And if there is one, you just have to aggregate up. In other words, the beautiful thing about the SITC statistics is you could do them at one digit, two digit, three digit, four digit, certainly at the one or two digit level, it would reveal no more than it currently reveals.

This is going to be helped by the fact that the new DVD technology will store a lot more data, and that data set could be put out. It seems to me if you ever want students in the university, and others, to really look at trade, you are going to have to put out something that has mode, and that has some kind of detail, and that has it at the level of a port.

MR. KNISELY: Any comment from the panel on that question?

MR. LAMBERT: I have a comment on that question. In regards to port level, again, I was at the Port of Long Beach for six years, and that was my job, as the market researcher for the port.

And we got a lot of variability to the market data that was released. And in some cases we could use it and in some cases we couldn't. But you are right, there is just a very basic lack of simple statistics on trade. For instance, I do a lot of work with the bulk industry, coal, iron, ore, and all that type. I mean, there are a lot of people that do specific work on very aggregated — supporting the broker industries.

But you don't see that for other commodities, which are more general, and may not have as specific a key.

DR. PISARSKI: I was going to say, to add to that, that we've been through a bad time, I think, statistically. And with the reincarnation of the BTS we are back to trying to reinvent where we were in 1977.

We are getting there, we are pretty close to 1977 now, that is the good news. One of the things we did back in the '70s is we did conduct subsample surveys of goods moving inland, origins and destinations by mode, off the ports, and conduct those flow surveys.

And we haven't done those in a whole bunch of years. But Bob has promised me that with all that money they have now that they can begin to look at that one more time.

Because, as you know, the documents often describe the source as basically the office, so you get an awful lot of grain coming from Chicago.

MR. KNISELY: It is the crop from New York City, from Manhattan, that seems to bother us.

DR. PISARSKI: Yes. And so the ability to measure, to go and subsample and measure the actual in-land ODs is certainly a possibility.

PARTICIPANT: Yes, I would second that, Alan, but to take up on what Bruce was talking about, let's talk about a really simple trade file. I teach students in the university, to graduate and undergraduate level.

I would like them to know a little bit more about trade, okay? The most simple dollar value trade is actually produced by the branch of this outfit, the IMF. But you can't get it on CD-ROM.

Now, this is a trade file so simple that you could put it in Excel, and all you would have is years and countries, exports and imports, dollar value.

And it wouldn't take hardly any resources, either, for those guys over in Commerce to put a dollar value file of U.S. trade. Such a simple thing is not available. Go to the Internet, take a look.

Then when you find trade data, let's say you go to one of the international trade sites, you will find blandly listed there, exports by major metropolitan area. You have to know one heck of a lot about trade to know that those exports are based upon the address in the export declaration, and not on the state of origin. They have nothing to do with the movement of goods.

So if you are looking at U.S.-Mexico trade you get it all coming out of Detroit, which is the headquarters of the auto companies. And nothing in the federal government tells you what this trade data you are looking at really is.

And those are simple, easy, straightforward things.

DR. PISARSKI: One of the reasons that there are these problems is that you are deriving virtually all of your import statistics from a system designed by Customs for the collection of revenue.

PARTICIPANT: But, for example, you don't get any import destinations because Commerce doesn't want to fool with it. And the only reason you ever got any export origins was because the states demanded it.

MODERATOR SCHACKNIES: This was, indeed, a marathon session. We covered numerous subjects, perhaps too many to absorb in two days. So on behalf of our agency and OECD we must apologize for cramming too much substance in two days, but it couldn't be helped.

And now for the concluding session, Joe Morris, the senior transportation program manager, who has been dealing with public policy issues, and has for a number of years, freight logistics, is going to try to synthesize all of the issues that we have heard about today, and that he has also dealt with over the past couple of years. I don't envy him that particular task, but I'm looking forward to it.

And then following his summary of the issues, Peter Ruane, the president and chief executive officer of the American Road and Transportation Builders Association, is going to try to address the political issues of where we are going to take this whole arena from here.

And then some goodbye and concluding remarks from our representatives from the OECD and the World Bank.

Summaries and Conclusions From Moderators of Panel Presentations—Recommendations for Follow-up Activities

MR. MORRIS: Thank you, Bert. Good afternoon, everyone.

The original format that was planned for this concluding session was to have each one of the session moderators give a summary of his or her session. And it was decided, in the interest of brevity, of expediting the proceedings, that a single summary would be given, and somehow I was nominated to give that summary.

So this is a task which, I think, is so impossible that I can't go wrong. But I will attempt to summarize, simply, what I have heard over the last two days of this quite information packed conference from 40 or 50 speakers, I believe.

And I start out with, my first viewgraph here is simply the Trilog project outline, which if I recall, is just about the first viewgraph that you saw here yesterday morning.

These come from the terms of reference, they also cull all the conference programming, and I see them as more or less a work plan, a series of stages for arriving at a product.

They start out with, it is a set of seven themes, beginning with the globalization of logistics, which as I understand it, is really the premise or hypothesis that justifies this activity, the OECD involvement. It implies a need for internationally coordinated government and action.

Then proceeding through a series of steps, again, sort of a work plan for arriving at a product. The themes are regional characteristics of logistics, sectoral and industrial characteristics, intermodality, financing, transport, and logistics systems, human resources implications of global transport and logistics, and finally evaluation of logistics systems in the development of performance indicators.

So that was the structure of the conference, the terms of reference in the next viewgraph, those are the last generalities that I'm going to have to offer, because as much as I could do by way of a summary was simply to compile a list of particular actions that governments could take, might possibly choose to take, for the purposes of reducing the cost of trading, including logistics costs and transportation costs, at the national, regional, or global level.

Of course the focus of the conference is on government actions, public policy. The list I've compiled very hastily, as I was listening here over the last two days, is I believe not my own list. I've tried to be, for the most part, objective and simply listing what I've heard.

Of course I expect that other people heard other things. But nonetheless, the order is pretty much chronological. There is no structure here, certainly no endorsement implied on my part of these ideas. This is a reporting assignment that I've tried to take on.

Also I think that the list is not startling. That is, there are pretty much familiar topics on it as it shaped up, and they probably aren't really action items, although I call them action items, they are stated as imperative sentences, but really I believe that most of the items of my list are objectives for government actions, rather than actions that anyone can go out today and take on, head on, because action in any one of these goals, really, is a political process.

They are political decisions since they involve government actions. All of the actions that might be taken to reduce transportation logistics cost by government will be political decisions that will be influenced by parties with conflicting interests.

And so the real action items, perhaps, which I'm not going to talk about at all, are politically involved, defining political strategies for reaching these goals. But perhaps there are some goals here.

And so that said, I'm simply going to run through the list of what I heard, and everyone here can make up their own list, if they wish.

My list starts with trade liberalization, which is more of a prerequisite than an element of logistics as it is usually defined. But, nonetheless, I think there have been several interesting examples of how trade barriers, especially the non-tariff variety of trade barriers, impose costs on the trade that survives the barrier.

A second theme that has been mentioned in multiple sessions, perhaps every session, is the need to improve the management of the processes that happen at international borders. Governments need to coordinate the problem of multiple jurisdictions within countries, as well as international harmonization of practices.

That is the whole point of the ITTS system in the United States that we just heard of here, that the problems aren't simply international, they start domestically.

The government should not lag the private sector in adopting electronic commerce, electronic interchange of information, perhaps a more general term. Certainly the private sector is going to lead the way in this, and government needs to keep up, adapt its procedures to the state of the art in the private sector.

The problem of uncertainty in crossing time, the variance of processing time, as well as the average value of processing time is an important dimension of the private sector cost generated by border operations.

Going on down my list, follow-up on regional trade agreements. This is much of the nitty gritty work that government agencies are today responsible for.

Continuing day-to-day working group attacks on harmonization issues, for example, vehicle weights and dimensions, which are a topic that we heard about several times, in a major dimension of trans-border issues in North America.

Going on in changing topics fairly drastically from point to point, I warn that these were chronological, rather than organized in any structure.

Internalize environmental cost by pricing. Environmental costs of transportation can't be ignored in any discussion of government policy toward transportation, but the one proposal we heard on the topic at this conference was to approach those by internalizing them, rather than by more restrictive forms of regulation.

Reduce port land-side congestion. This is really an issue that overlaps numerous others, but is certainly an issue that is highly prominent in the United States and was mentioned in several sessions.

One thing that struck me, and this is one of my few additions to this list, I believe, is that there were few, if any, discussions of pricing as a solution to the land-side congestion problem, per se. There were several mentions of pricing throughout the conference, but none that I can recall off-hand in that specific context.

The public sector is responsible for providing elements of the infrastructure. And here it seems that the regional diversity of historical patterns of what the public sector provides is so great, that it leads you to wonder whether there is any essentially public infrastructure.

Nonetheless it is clear that for certain parts of the world, government is, for the foreseeable future, for a variety of historical reasons, at least stuck with certain parts of the infrastructure.

That may be true, for example, of the roads in the United States. And therefore government is responsible for provision and management of those facilities. The carrying out of those

responsibilities in ways that can reduce transportation logistics costs might involve properly accounting for freight related benefits from a system perspective, in project evaluation; properly pricing of infrastructure, since clearly public provision of infrastructure does not imply a subsidy, even though that is a trap of thinking that sometimes people fall into.

Also the public sector needs to acknowledge risks involved which are not always explicit, or even implicit in project evaluations, and in public decision making: how infrastructure can be made obsolete by changes in technology and shifts in trade.

The next bullet is a laundry list of regulatory issues. Continued domestic and international economic deregulation and liberalization. Again, these are a list of issues that I heard at the conference, and some are paraphrases of statements of speakers, rather than my own expressions of my own opinion.

Don't protect national flag carriers, privatize railroads, liberalize telecom, recognizing that telecom is an essential component of logistics. Deregulate ocean shipping, don't subsidize the postal service because it competes with private express services.

Move away from bilateral agreements as a form of international air transport regulation, open cabotage markets, eliminate barriers to third party service provision. That is a point that I don't fully understand myself, but the issue of the absence of well developed third party services in many parts of the world, not only the less developed countries, has been mentioned several times here, and seems to be a significant issue. Presumably, at least some of the reasons why those services do not exist are regulatory in nature.

I might add to this list regulatory constraints on the labor pool, which was mentioned in the session on human resources.

Next on my list, and I only have one more viewgraph after this, reorganize government transportation administration at the administrative level, and in the United States it has been suggested at the level of the legislature, as well.

In some cases, at least, compensate the losers of government stimulated adjustments. This refers, for example, to labor contract buyouts.

Equipment issues, "harmonize" domestic, regional and international equipment, design standards and practices. I put harmonize in quotation marks, because it is clear that no one is quite sure what this means. Certainly in the United States this means, above all else truck size and weight and there is a real question of optimizing. It is an optimization problem, optimizing truck size and weight with respect to the other elements of the transportation system; the roadway, the other vehicles that use the system and so forth, as well as in the international perspective the practices in ordering countries, and globally, with respect to containers.

Accept limited government responsibilities with respect to information technology. I mentioned some of these points before. Catch up with the private sector in, for example, electronic elimination of paperwork by use of information technology.

Reduce regulatory obstacles to low earth-orbiting networks. That is another specific item from one of our presenters. Be a participant in multi-party voluntary discussions of interoperability issues.

This is a way of awarding mention of standards. Container trucking was the example that one of our speakers mentioned.

Recognize that progress depends on human capital. The government role clearly involves basic education; it involves public employee training and recruitment needs. And certainly the human

capital skills requirements of the public sector agencies are changing, as transportation changes, and agencies are in trouble keeping up with that.

Collect and provide data, when needed to improve decisions, and costs are justified by benefits. An issue here that I didn't hear mentioned is that the issue of what data the government should provide is analogous to the issue of what infrastructure the government should provide.

There may be grounds there for public provision. That doesn't necessarily mean public subsidy of that data.

Finally, aid developing countries to participate in the world trade community, recognizing that needs are as much or more for development of institutional foundations, and missing service sectors, as they are for concrete-steel infrastructure.

So this constitutes an enormous agenda, it seems to me. Even if the liberal view of a strictly limited government role is adopted, certainly there would be several ways to cut a summary of this conference.

But it seems like such a list of policy goals, perhaps keyed to the terms of reference would certainly be a place to start.

So that is my stab with the short amount of time to reflect on what has been heard. I'm sure that all of our thoughts will jell over the coming weeks.

With that I'm going to move on and introduce the next speaker on this panel, who is Mr. Peter Ruane, who is president and chief executive officer of the American Road and Transportation Builders Association.

Mr. Ruane is going to speak on perspectives from the private sector, the role of industry coalitions.

MR. RUANE: Thank you. Good evening, ladies and gentlemen. It is great being tail end Charlie, here. All of you have visions of getting in your car or airplanes, or getting home, or getting somewhere beyond listening to the final speakers, I'm sure. But I thank those of you who did stay for the end here.

I've been asked to comment on the relevancy of some recent U.S. experience, the passage of major legislation to the global marketplace. And listening to the summary, and I was also asked to comment on some of the things that took place in the sessions, and I can only do that indirectly. I feel like the sports commentator who is supposed to give the highlights of the match, but I was not at the game. So I'm not sure what took place, but I do know the final score, and I know who won.

In the United States this past year who won was the entire logistics community, the public and the taxpayers, thanks to an effort on the part of a huge coalition of interests in the United States that worked together for several years to increase transportation infrastructure investment, most notably in roads and bridges and mass transit.

The coming year is working together, again, to increase investment in our airport, aviation transportation infrastructure.

How does this relate to public policy issues and global freight logistics? I don't think it is a stretch to draw some inside lessons from the recent U.S. experience.

I have a summary of one particular study that our association did sponsor that was used in the debate in the lobbying effort with our U.S. Congress to obtain passage of this new legislation.

And it focuses on one basic point that I think is germane globally. There were some forces in our Congress who wanted to get rid of overall federal support for a national highway system, arguing that the individual states could do a better job of supporting their local state highway and bridge networks and mass transit systems than the federal government could do, collectively, and there was no justification for retaining a strong national program because our national highway system was, in fact, complete.

We did a study of the actual commodity flow, looking at truck shipments between and among the states, the 50 states, and found to some people's surprise that most of the states were more dependent on the status and quality of the transportation system in their adjacent state, empirically, than they were on their own states.

And I think that point may seem self-evident at first glance. If you are going to have a seamless transportation system you clearly want to have good facilities throughout all the states, or all the countries in which your system is passing through. Yet it was not so well understood, and individual states, in fact, discovered that the trucking shipments were maybe originating in their state, but were more dependent for efficiency and timely delivery on the condition of facilities in adjacent states, or states down the way, hundreds and hundreds if not thousands of miles apart.

And we were able to quantify that and make a point that there was an overriding need for maintenance of a national highway system.

I would suggest, I don't think it is a leap, to make the point that the same holds true, particularly for contiguous countries, if not the world as a whole. We are becoming more and more dependent on the status of the transportation facilities in adjacent countries, and countries far away from our home country, than we are maybe even in our own native country.

With the growing influence, we have many members of our association that are multinational corporations that have production facilities located in dozens of countries, and their profit and the efficiency of their operation is clearly dependent on the transportation infrastructure of the producing country.

And we would argue that, in fact, the lack of a good transportation infrastructure in that country, if they have production facilities, is somewhat of a constraint of trade that has not been widely recognized, nor addressed by many of the global organizations.

But our lesson, the lesson we drew from the recent transportation legislation in the United States, which is a record level of spending, over \$200 billions will be spent in the next five years on improving our infrastructure.

This was brought about in the face of huge efforts to cut investments in transportation infrastructure. And yet we succeeded in getting this investment only because of a huge cross section of interests that were brought together in a coalition that involved private industry, labor, environmental groups, surprisingly, and the government as a whole. And the stakeholders, the interests that benefit from this spending were also party to this effort.

I have had the benefit and pleasure of addressing an OECD conference that was similar in nature back in '92 in Budapest, and the same kind of subjects were discussed, and I remember the dialogue very well.

I have not seen many such coalitions put together in other countries. I know Canada right now is seriously considering this, given their challenges, and other countries are looking at the model that evolved here over the last three or four years.

I would suggest that there is a need to do this on a world-wide basis, to get the people involved, the corporations that are producing, the ones that are providing the infrastructure, and the users, all in the same room, to work on increasing investment.

The issue that we are very sensitive to, and one of the things that we spend a lot of time on, which I don't see happening in too many countries, is actual advocacy about the benefits of such investments.

While the managers of logistics for the various modes surely recognize this, we see very few governments taking up the challenge of actually advocating greater investments. Most are compromising, most are yielding to pressures, particularly from the radical environmental communities, be they green parties, elected or not, and are not leading the charge for major transportation improvements and investments.

They, in fact, are coming out with ways to disinvest, and to do less, not more.

We would argue that those who actually are dependent on the system for their livelihood, to get their product to market quicker, faster, more efficiently, need to push those governments to become advocates of investment, rather than maintaining neutral roles, or roles of essentially political correctness, compromise where serious investment, new investment does not take place.

That is a strong generalization, but I would be glad to defend that anywhere, because our members are involved in design and construction of transportation projects all over the world, and we see very few countries aggressively pushing such investments.

I would argue that is one of the outcomes of this conference that ought to be looked at pretty closely. What is the role of government in taking on more of an active stance there in improving logistics? We believe you have to improve investment in the basic infrastructure, and all the technology that is out there, obviously, is wanting a hand, and having immense effect. But without a basic strong investment program, earmarked money, guaranteed money that is not subject to diversion, that is actually spent on transportation improvements, in our judgment, is the first step.

A coalition can be formed among the stakeholders, in the private sector, to support that. And support it in a very aggressive way.

So my message today, the lesson we learned in the last four years, in such a short period of time, here, is that you can bring together the users, the members of the rational environmental community, I will call them, all levels of government, and the private sector to work toward successful implementation of greater spending programs, one that actually can make a difference.

We do this for some altruistic reasons, but we also acknowledge, up front, the clear motives of building market and protecting the infrastructure that is already there, that has been neglected in so many areas.

I would argue that we would be very interested in talking to folks about the formation of coalitions to work on this on more of a global basis, and take the lessons learned in the United States, and try to transfer them elsewhere.

We think there is receptivity in some countries, and would argue that this organization has a role to play there. I know that the financing organizations can't do it alone. We have similar coalitions working on trying to expand public-private ventures here in the United States, and there is a huge market for that overseas.

So when one looks at the actual numbers of what the real logistics costs are, and the size of investments here in the United States, and then looks at it world-wide, it is clear to us that, without such a broad-based coalition of interests that are actually mobilized, it is not going to happen.

A fragmented approach and looking to technology to solve this is really only part of the solution. A return to the basic suggestion of increasing the investment in these countries, or all countries, is the first step to increasing the efficiency of our global logistics system.

Another observation is that, we had a considerable difficulty in getting the various modes to cooperate. And once they were convinced of all the interdependence, and the actual benefits that they all would accrue from working together, it became a much smoother process.

And, again, that is something that is not occurring in a common way in most countries that I'm familiar with. I would urge those of you here in attendance to take a close look at the mechanisms we use to bring that about here in the United States.

So it is feasible. I realize it is much more difficult to try to accomplish this on a larger scale, regionally, in parts of the world. But I think the lessons we've learned, and some of the research that we've sponsored, is transferable around the world.

We would be anxious and glad to help this organization and anyone in attendance, to get involved in such a broad-based effort.

MR. MORRIS: Thanks, Mr. Ruane. The third speaker on this program is Anthony Ockwell, who is the principal administrator of the transport division in the Directorate for Science Technology and Industry of the OECD.

He is going to have concluding remarks on perspectives in the public sector, next steps.

MR. OCKWELL: Thank you very much, Joe.

In trying to draw, to get to some closing comments, I asked myself a number of questions.

Should a major port be built at the end of the railway tracks? Should the railway link be built to facilitate the port? Should new warehouses be built in the terminals? Or will the future logistics not require warehousing at all?

Should the liter of orange juice be concentrated at the point of production, and brought to the consumer in the concentrated form, rather than being mixed with water before transport? Or should the oranges be grown at the point of consumption? Or should we stop drinking orange juice all together because it is much too complicated?

I wouldn't agree to the latter, as I sit there each morning and enjoy my orange juice. But the complex interaction that we do see among consumer preferences, transport logistics, and an effective market organization is intriguing and fascinating.

It demonstrates that we live in an imperfect world, where we can only strive toward a better organization of society in order to increase the common good.

In doing so we face an endless number of difficult choices, and the only way we can cope with these choices is to keep on trying to improve our knowledge on how the world operates, how it moves, and what the consequences of the actions are.

And this is why at the OECD we do research, and why we participate with member countries in a cooperative way, to try and address these common issues.

The central theme of the Trilog project is to identify and compare common issues at the regional and international levels, but also more importantly to recommend possible solutions and approaches that can facilitate the learning process of OECD member countries covering the Asia, Pacific, Europe, and North America.

And thus increasing the information available to help us to define and pursue, and implement more effective policies to improve the operating systems before us.

The project I'm to set up in a framework that can better foster private sector development, standardization, and the use of technologies and practices, to improve the overall level of integrated transport efficiency.

The three regional groups that Thomas Anderson referred to yesterday morning will work together in four directions.

First, an assessment of the problems and opportunities at the local and regional levels. Second, an assessment of the impacts of strategies developed in one region on the strategies pursued by other regions. Three, the integration of regional strategies at the global level, the needs, the gaps, the opportunities, and the requirements. And, finally, the formulation of key recommendations for policy adjustment within each region, and/or coordination across regions.

I compliment Joe for his summary of the issues. It is certainly not an easy task. A good number of issues have been raised, which I think also lend support to the project before us. However, I would suggest that we do have agreement on a number of key issues.

We have seen a considerable increase in the world trade, and all indicators suggest that this increase will continue. Ongoing liberalization and further free trade agreements are on the horizon, which will continue to stimulate the growth in world trade.

However, dismantling barriers to trade will require the illumination of barriers to efficient transport. Economic growth and transport demand have followed the same growth curves throughout history.

Before leaving Europe on Tuesday I saw the latest figures for western Europe, which indicate that inland transport has increased at double the GDP in 1997.

A challenge for the future will be to maintain downward pressure on the cost of transport logistics. The changes that we have discussed and which are before us will have a dramatic impact on transport efficiency to meet environmentally sustainable targets on pollution, safety, and noise.

And I think the references we've seen over these two days to pricing of infrastructure and to urban congestion also highlight the cost of urban congestion in terms of its component in transport logistics.

This will, of course, require a new combination of technologies and the implementation of technologies which we do have before us in a way which continues to address changes in the organization of management and transport demand, including the issue of how we get those prices right.

At the same time we are seeing the development of due concepts for market arrangements. The way goods are distributed is changing due to the emergence of just-in-time and new concepts like electronic commerce.

All these trends are being driven by consumer demand for new and timely products. To provide for the transport efficiency we need to know the effects of these changes and where the effects are likely to impact.

All of these issues will have more of an effect on the future transportation and logistics systems than on society overall. Our future research must take these future challenges into account, the aim being to achieve sustainable development in the transport sector without hampering economic growth and trade relations.

I congratulate the Federal Highway Administration, and the World Bank, for organizing such a comprehensive program, which has allowed these issues to bubble to the surface.

And this is where I hope that the Trilog project can assist in addressing some of these issues as we move forward over the next 18 months. Perhaps in talking about the future let me try to outline the way forward as far as the Trilog project is concerned.

As we move from the conferences, the challenges before the North American conference comprising the United States, Mexico, and Canada are to synthesize the issues which have been discussed at this conference.

And in particular I think the challenge there is to try to define or delineate what issues are very much in the mind of the private sector.

I think there is a second set where the private sector has primary responsibility for addressing the issue, but governments can play a facilitating role.

But I think the third set very much belongs to the public sector in terms of what changes in regulations, what changes in the exchange of data, the data requirements, the customs issues, the sorts of issues which Joe discussed so well which need cooperative resolution, not only within the region, but also internationally in terms of developing a seamless integrated transport system.

As we move toward June 1999, each of the three task forces will be proceeding in a similar way in terms of identifying those issues from which, post-June, they will be in a position to determine the common set as far as international cooperative action is concerned.

At the same time there may be issues that are specific to two regions, which may also need to be addressed in such a way. November 1999 is the finalization of the three regional taskforce reports, and over that period, of course, between June and November I would hope that we would

see some convergence in terms of integration for those issues in the drafting of a final report which echoes the international issues.

That will, then, bring us to the beginning of the year 2000, so we will have a first draft of the plenary report, or the integrated report, which will then target the Steering Committee meeting of the Road Transport Research Program in April of the year 2000.

Being on target and on time will allow us to deliver that report by 2000. It is obviously a very difficult and challenging task, and there are many issues before us that will affect a fairly tight timetable.

As Thomas Anderson mentioned yesterday morning the current three programs for road transport research of the OECD certainly have been broadened to include intermodal linkages. This and intermodal freight transport advisory group are key projects in the broadening of the program.

The other two issues or elements which I think need to be mentioned, is increasing focus on economic and policy analysis, and putting up front the policy implications or recommendations for government planning from the research.

On that note, Mr. Chairman, I think it simply remains for me to thank the Federal Highway Administration, in particular Bert Schacknies, for an excellent job in convening this conference over two days, which I have very much appreciated and enjoyed.

I would also like to acknowledge the support that Bert has received from King Juhel, and I think without that support, this conference could not have been so well put together.

I would also like to thank the World Bank for their important role in helping to pull this conference together, which I regard as being a particularly important master in the work of the North American taskforce as we head down the path next year.

Finally I would like to thank the speakers, and of course the participants, in making the two days so productive and worthwhile as far as the OECD project is concerned.

Thank you, Mr. Chairman.

Closing Comments

MR. JUHEL: Just to save time, and don't be afraid, I just want to say a couple of words on behalf of the World Bank. First thank you for coming here and sharing your time with us. It is Friday evening, late on a Friday, barely a week away from Christmas, so indeed such dedication, so thanks for having stayed that long.

You could hear John Flora yesterday morning saying how important the bank believes it is to be involved in this effort to promote better effectiveness, better efficiency in trade and transport logistics. It is just too important an issue for client countries to be overlooked. Definitely the bank will continue to be a partner in this TRILOG exercise and beyond, in order to try to translate the policy agenda which, I hope, will have emerged from this work into research on the ground.

So that is it, thanks from all of us, for having again shared two days with us. I want to wish you a merry, merry Christmas, and see you in the New Year.

MODERATOR SCHACKNIES: No, I don't want to have the very last word on the subject. I had to do the very first word on the subject, and this is not going to be the last one. You are going to be hearing from us in the next three years.

But perhaps I'll emphasize one more point, just one intermediate step in a long process of defining a common agenda. And we count all of you as members of the task force.

So call upon us, write us letters, send us your papers, contribute with others to participate in this process, and I will see you at the next event, probably in the next two months.

Thank you, good night, and Merry Christmas.